

The American Journal of Pharmaceutical Education

**THE OFFICIAL PUBLICATION OF THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY**

"Anyone who knows the varied educational needs of American youth would hope, however, that more institutions will courageously and forthrightly declare that they are gearing their programs to the needs of the many students whose interests and aptitudes differ from those of the students of half a century ago. Unlike many of their competitors, they will then maintain their integrity by representing to prospective students and the public generally the type of education they are really prepared to offer on a sound basis. But the more important consideration is that they will stop trying to "live up to the Jones's" and begin to organize their curricula around the interests and abilities of the student clientele they can actually hope to attract. Furthermore, this practice will lead to a specialization of labor among academic institutions, with a consequent universal improvement in American higher education. Every encouragement should be given to atypical institutions. And educational policies having the effect of reducing these institutional differences should properly be condemned."—*Earl J. McGrath.*

Volume IX

April, 1945

Number 2

INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

Alabama

Alabama Polytechnic Institute, School of Pharmacy, Auburn. (1905)*
Lynn S. Blake, Dean

California

University of California, College of Pharmacy, Berkeley. (1942)
Troy C. Daniels, Dean
University of Southern California, College of Pharmacy, Los Angeles. (1918)
Alvah G. Hall, Dean

Colorado

University of Colorado, College of Pharmacy, Boulder. (1921)
Committee for Administration, David W. O'Day, Chairman, Joseph B. Sprouls, Norman F. Witt

Connecticut

University of Connecticut, College of Pharmacy, New Haven. (1935)
Henry S. Johnson, Dean

District of Columbia

George Washington University, School of Pharmacy, Washington. (1900)
W. Paul Briggs, Dean
(L. W. Hazleton)
Howard University, College of Pharmacy, Washington. (1926)
Chauncey I. Cooper, Dean

Florida

University of Florida, School of Pharmacy, Gainesville. (1925)
Perry A. Foote, Director

Georgia

University of Georgia, School of Pharmacy, Athens. (1928)
Robert C. Wilson, Dean

Idaho

University of Idaho, Southern Branch, College of Pharmacy, Pocatello. (1927)
Eugene O. Leonard, Dean

Illinois

University of Illinois, College of Pharmacy, Chicago. (1900)
Earl R. Serles, Dean

Indiana

Indianapolis College of Pharmacy, Indianapolis. (1927)
Edward H. Niles, Dean
Purdue University, School of Pharmacy, Lafayette. (1901)
Glenn L. Jenkins, Dean

Iowa

Drake University, College of Pharmacy, Des Moines. (1942)
Committee for Administration, J. Earl Galloway, Chairman
Pharmacy, Iowa City. (1901)
Rudolph A. Kuever, Dean

Kansas

University of Kansas, School of Pharmacy, Lawrence. (1900)
J. Allen Reese, Dean

Kentucky

Louisville College of Pharmacy, Louisville. (1900)
Gordon L. Curry, Dean

Louisiana

Loyola University, New Orleans College of Pharmacy, New Orleans. (1921)
John F. McCloskey, Dean
Xavier University, College of Pharmacy, New Orleans. (1923)
Lawrence F. Ferring, Dean

Maryland

University of Maryland, School of Pharmacy, Baltimore. (1900)
Andrew G. DuMez, Dean

Massachusetts

Massachusetts College of Pharmacy, Boston. (1900)
Howard C. Newton, Dean

Michigan

Detroit Institute of Technology, College of Pharmacy and Chemistry, Detroit. (1923)
Esten P. Stout, Dean
Ferris Institute, College of Pharmacy, Big Rapids. (1938)
Ralph M. Wilson, Dean
University of Michigan, College of Pharmacy, Ann Arbor. (1900)
Howard B. Lewis, Dean
Wayne University, College of Pharmacy, Detroit. (1925)
Roland T. Lakey, Dean

Minnesota

University of Minnesota, College of Pharmacy, Minneapolis. (1901)
Charles H. Rogers, Dean

Mississippi

University of Mississippi, School of Pharmacy, Oxford. (1913)
Elmer L. Hammond, Dean

Missouri

St. Louis College of Pharmacy, St. Louis. (1900)
Arthur F. Schlieting, Dean

Montana

State University of Montana, School of Pharmacy, Missoula. (1917)
Charles E. F. Mollett, Dean

Nebraska

Creighton University, College of Pharmacy, Omaha. (1916)
William A. Jarrett, Dean
University of Nebraska, College of Pharmacy, Lincoln. (1913)
Rufus A. Lyman, Dean

*Denotes year institution was admitted to the Association.

THE AMERICAN JOURNAL — OF — PHARMACEUTICAL EDUCATION

Volume IX

April, 1945

Number 2

CONTENTS

The Procrustean Bed of Higher Education— <i>Earl J. McGrath</i>	169-175
Pharmaceutical Engineering— <i>Arthur F. Peterson, Ph. G., B. S., Ph. C.</i>	176-184
Pharmacy and the National Welfare— <i>H. Evert Kendig</i>	185-198
Material and Outline for a Short History of Pharmacognosy— <i>George Urdang</i>	199-206
Pharmacy and Aviation— <i>George Urdang</i>	207-209
Experiences in Teaching Qualitative Analysis by the Semi-Micro Method— <i>Louis A. Reber</i>	210-213
A Tribute to José Hipólito Unanue— <i>Georgianna Simmons Git- tinger</i>	214-215
A Course in Dispensing Pharmacy— <i>Earl P. Guth</i>	216-220
Record Keeping in the Dispensing Laboratory— <i>Elmer M. Plein and L. Wait Rising</i>	221-222
Thumbnail History of Pharmacy in the U. S. Army— <i>Ralph Bien- fang</i>	223-228
Pharmaceutical Education and the Plant Science Seminar— <i>Elmer H. Wirth</i>	229-233
Some Suggestions for Limitation on Enrollments in Colleges of Pharmacy— <i>Leslie B. Barrett</i>	234-239
Pharmacy Graduates and Commissions— <i>Wortley F. Rudd</i>	240-243
Amasa Sproat, Pharmacist of Early Chillicothe— <i>Clarence M. Brown</i>	244-258
Editorials.....	259-261
The President's Page.....	262-267
The Editor's Page.....	268-276
Gleanings from the Editor's Mail.....	277-282
Notes and News.....	283-287
Miscellaneous Items of Interest.....	288-292

Published quarterly by the American Association of Colleges of Pharmacy at Lincoln 8, Nebraska. (Claffin Printing Company.) Subscription price \$2.00. Single copies 50 cents. Entered as second class matter July 1, 1937, at the postoffice at Lincoln 8, Nebraska, under the Act of August 24, 1912.

Editorial Office: College of Pharmacy, University of Nebraska, Lincoln 8, Nebraska. Address all communications to the Editor.

Officers and Elective Committees, 1944-1945

PRESIDENT

GLENN L. JENKINS - - - - - *Lafayette, Indiana*

VICE PRESIDENT

GORDON L. CURRY - - - - - *Louisville, Kentucky*

SECRETARY-TREASURER

CLARK T. EIDSMOE - - - - - *Brookings, South Dakota*

EXECUTIVE COMMITTEE

B. V. CHRISTENSEN.....1945...*Columbus, Ohio*
CHARLES W. BALLARD.....1945...*New York, N. Y.*
EARL R. SERLES.....1945...*Chicago, Illinois*
TROY C. DANIELS.....1946...*Berkeley, California*
CHARLES H. ROGERS.....1946...*Minneapolis, Minnesota*
RUFUS A. LYMAN, Editor.....*Lincoln, Nebraska*
FOREST J. GOODRICH,
 Past President.....*Seattle, Washington*
GLENN L. JENKINS, President.....*Lafayette, Indiana*
CLARK T. EIDSMOE,
 Secretary-Treasurer.....*Brookings, South Dakota*
HENRY S. JOHNSON,
 President-Elect.....*New Haven, Connecticut*
 Member Ex-Officio, without vote

SYLLABUS COMMITTEE

HENRY M. BURLAGE.....1945...*Chapel Hill, No. Carolina*
ELMER H. WIRTH.....1946...*Chicago, Illinois*
ELMER L. HAMMOND.....1947...*Oxford, Mississippi*
L. WAIT RISING.....1948...*Seattle, Washington*
GEORGE L. WEBSTER.....1949...*Chicago, Illinois*
ELDIN V. LYNN.....1950...*Boston, Massachusetts*
JOSEPH B. BURT.....1951...*Lincoln, Nebraska*

PRESIDENT-ELECT FOR 1945-1946

HENRY S. JOHNSON.....*New Haven, Connecticut*

HONORARY MEMBER

ZADA M. COOPER.....*Villisca, Iowa*

The American Journal of Pharmaceutical Education

THE PUBLICATION BOARD

RUFUS A. LYMAN
Chairman and Editor

CLARK T. EIDSMOE
Secretary

Bernard V. Christensen

Charles H. Rogers

Forest J. Goodrich

Troy C. Daniels

Glenn L. Jenkins

Charles H. Ballard

Earl R. Series

COLLABORATORS

Airston, Margaret.....	University of Southern California
Alstodt, Berl S.....	Long Island University
Ambroz, Walden F.....	Indianapolis College of Pharmacy
Barrett, Leslie B.....	University of Connecticut, College of Pharmacy
Bedworth, Wilfrid J.....	University of Buffalo
Bienfang, Ralph D.....	University of Oklahoma
Bliven, Marjorie B.....	George Washington University
Bowers, Roy A.....	University of Kansas
Bradt, Frederick T.....	Wayne University
Busse, Louis.....	University of Wisconsin
Cataline, Elmon L.....	University of Michigan
Cole, B. Olive.....	University of Maryland
Cooper, Chauncey I.....	Howard University
Crossen, George E.....	Oregon State College
Davis, W. John.....	Duquesne University
DeKay, H. George.....	Purdue University

Durand, Edwin M.	New Jersey College of Pharmacy
Eidsmoe, Clark T.	South Dakota State College
Emch, Bess G.	University of Toledo
Fredell, Walter G.	Drake University
Geiler, Frederick L.	West Virginia University
Gidley, William F.	University of Texas
Hanmer, Howard H.	Detroit Institute of Technology
Hargreaves, George W.	Alabama Polytechnic Institute
Healy, Roland	Ferris Institute
Hiner, L. David	Ohio State University
Ireland, Edward J.	Loyola University
Jacobs, Marion L.	University of North Carolina
Jarrett, William A.	Creighton University
Jones, James W.	State University of Iowa
Johnson, Carl H.	University of Florida
Johnson, William W.	University of Mississippi
Kelly, Charles J.	Xavier University
Kerker, Eleanor	Columbia University
Kimura, Kazuo K.	University of Nebraska
Kramer, John E.	Philadelphia College of Pharmacy
Mantz, Harry W.	Temple University
Martin, Lewis E.	University of Illinois
Melendez, Esteban N.	University of Puerto Rico
Mollett, Charles E. F.	Montana State University
Morrison, Robert W.	University of South Carolina
Musick, Albert H.	University of Tennessee
Netz, Charles V.	University of Minnesota
Odney, Kathryn C.	North Dakota Agricultural College
Ohmart, Leslie M.	Massachusetts College of Pharmacy
Prout, William A.	Medical College of the State of South Carolina
Raabe, Rudolph H.	Ohio Northern University
Reyes, Feliciana	University of the Philippines
Rising, L. Wait	University of Washington
Rist, Walter	St. Louis College of Pharmacy
Rivard, W. Henry	Rhode Island College of Pharmacy
Rowe, Thomas D.	Medical College of Virginia
Slone, Earl P.	Louisville College of Pharmacy
Sprowls, Joseph B.	University of Colorado
Sumerford, W. Taylor	University of Georgia
Swinyard, Ewart A.	University of Idaho, Southern Division
Trupp, Malcolm S.	Western Reserve University
White, Alfred J.	Fordham University
White, Allen I.	State College of Washington
Wilson, Stephen	University of Pittsburgh

The Procrustean Bed of Higher Education*

EARL J. McGRATH

Dean of Administration, University of Buffalo

One of these bad people was named Procrustes; and he was indeed a terrible fellow, and had an ugly way of making fun of the poor travelers who happened to fall into his clutches. In his cavern he had a bed on which, with great pretense of hospitality, he invited his guests to lie down; but if they happened to be shorter than the bed, this wicked villain stretched them out by main force; or, if they were too tall, he lopped off their heads or feet, and laughed at what he had done, as an excellent joke. Thus, however weary a man might be, he never liked to lie in the bed of Procrustes.

This condensed version of the mythological tale of Procrustes dramatizes a danger which institutions of higher education now face as they establish policies to govern the evaluation of educational growth incident to military service. In the recent widespread discussions of this problem, three points of view are reviewed with respect to the amount of credit which service men should receive for their varied military experiences.

The simplest procedure, employed by most colleges and universities after the last war, would involve the granting of a certain amount of "blanket credit" for military experience regardless of its educational worth. This practice has now been universally condemned as academically and ethically irregular. Though a few high schools and colleges have made extravagant grants of credit for inservice training, there is little danger that the practice of awarding blanket credit will be generally revived. Such "handouts," however generous the intention of the donor, constitute a doubtful form of patriotism and a disservice to the veteran who will be the recipient of *ersatz*, rather than genuine, academic credit.

A second school of thought holds that no credit should be granted for military experience. This policy is patently unfair to many men and women whose military life has included experiences of demonstrable educational value. Students should not be expected to study subject matter that they have already

* Reprinted at the suggestion of Dr. R. P. Fischelis and at the request of the Editor from *School and Society*, February 10, 1945, Vol. 61, No. 1572, pages 81-84. Dr. McGrath is a member of the American Council on Pharmaceutical Education, representing the American Council on Education.

learned through their military training or through study during their leisure time. Veterans will be impatient with institutions which impose such mechanical and arbitrary requirements. Few secondary schools or colleges have taken the inflexible position that they will not consider granting credit for any education completed during military service.

A third philosophy of accreditation, which has gained virtually universal acceptance, rests on the principle that any service experience of possible educational worth should be assessed "in terms of demonstrated educational competence."¹

This point of view, laudable in principle, may in practical application very well become the Procrustean Bed of American higher education. In attempting to prevent grants of blanket credit, the colleges and universities are in danger of embracing a system of accreditation that in the long run may be more unjust to the veteran and more damaging to the future of higher education in this country than the practice of granting blanket credit which, at worst, would be a temporary evil. Although they begin with the disarming statement that responsibility for determining how much credit is to be allowed for military experience should rest with the individual institution concerned, recent discussions emphasize the desirability of using uniform examinations in order that comparisons may be possible among institutions.

A simple alternative to the use of standardized tests in the accreditation of military experience has been only inconspicuously referred to in most discussions of this subject, though it is clearly more sound educationally and fairer to the serviceman. Justice can be done and educational standards maintained most easily if each institution will apply the standards and use the testing instruments normally employed for measuring the educational development of its own students. In practice this would mean that a serviceman who felt he deserved credit for a knowledge of trigonometry would be given an examination in *that* subject prepared by the mathematics department in *that* institution. The use of outside examinations for the purposes of comparing institutional scores is totally unwarranted. It will result in invidious comparisons, delay in administration, and an emphasis on false standards.

¹ "Sound Educational Credit for Military Experience," American Council on Education, Washington, D. C., 1943. p. 2.

The crucial importance of maintaining institutional independence in the evaluation of military experience cannot be appreciated until certain recent social and educational trends are reviewed. One of the most arresting of these phenomena has been the rapid increase in college enrollments in the past 50 years. In 1890, there were only 156,000 students in all types of institutions of higher education. By 1940 this figure had increased to about 1,500,000.² In 1940, one out of every seven American youths of college age was enrolled in some type of higher institution. This increased college attendance has been caused by a number of social forces such as compulsory school-attendance laws, labor laws, an increased proportion of adults in the population, demands by the professions, industry, and commerce for advanced general and specialized education, and a desire on the part of the working classes for more education for their children. Students of American social organization believe that, save for a social upheaval of major proportions, these influences will continue after the war. When the counteracting influences of the war are removed it may confidently be expected, therefore, that enrollments in both secondary schools and colleges will continue to rise for a number of years. Only now is America really reaching the goal of a democratic educational system envisaged by those who, in the earliest years of the Republic, believed that widespread dissemination of knowledge among the people was the only sure foundation of liberty and prosperity.

As the democratizing process has proceeded, the high schools have graduated many students different in scholastic aptitude and in academic interests from the graduates of a half century ago. Many of these students are nevertheless seeking admission to institutions of higher education. This heterogeneous student body requires a widely varied educational offering if students' needs are to be met. Hence standards for admission and for graduation in colleges granting the bachelor's degree should vary considerably.

Many educators, unfortunately, view this variation in standards and in curricular content with profound concern. They urge measures calculated to reduce these differences among institutions. Anyone who knows the varied ed-

²U. S. Office of Education, "Biennial Survey of Education, 1938-40," Washington: U. S. Government Printing Office, 1942, vol. II, p. 30.

educational needs of American youth would hope, however, that more institutions will courageously and forthrightly declare that they are gearing their programs to the needs of the many students whose interests and aptitudes differ from those of the students of half a century ago. Unlike many of their competitors, they will then maintain their integrity by representing to prospective students and the public generally the type of education they are really prepared to offer on a sound basis. But the more important consideration is that they will stop trying to "live up to the Jones's" and begin to organize their curricula around the interests and abilities of the student clientele they can actually hope to attract. Furthermore, this practice will lead to a specialization of labor among academic institutions, with a consequent universal improvement in American higher education. Every encouragement should be given to atypical institutions. And educational policies having the effect of reducing these institutional differences should properly be condemned.

A score of years of intensive effort has been required to gain widespread acceptance of the principle of institutional variation. The necessary standardization of college programs to assist the military services in the successful and rapid prosecution of the war has resulted in a temporary reversal of this movement. But, as the war draws to a close and servicemen and women resume formal schooling, their educational background will be even more varied than that of normal student groups. In the postwar years it will be all the more necessary, therefore, for institutions *collectively* to adapt their programs to all the varied purposes of students while *individually* attempting to serve certain groups with common purposes, interests, and abilities.

In considering the evaluation of military experience, a review of the development in examination practices since World War I will be rewarding to those who must deal with this problem. Colleges have generally abandoned the practice of granting degrees for the completion of a certain number of miscellaneous courses carrying an aggregate of one hundred-odd "units of credit." Many institutions have replaced individual course examinations with comprehensive examinations designed to measure something more than the student's ability to recall the various bits of information learned in a

dozen or more courses. They measure not only what the prospective graduate has memorized, but also what skills he has acquired in intellectual workmanship, such as his capacity to draw together information relevant to the problems presented, and through logical reasoning to reach a defensible conclusion. The emphasis in these examinations is upon the student's ability to manage his own intellectual resources effectively rather than upon his possession of a body of fact in common with all his fellow students. It is crucially important that this type of educational appraisal be encouraged. These attempts to adapt the examining procedures to the particular needs of students of a given institution can be given impetus in connection with the special problem of the accreditation of military experience.

If military experience of educational value is to be fairly appraised, educational standards maintained, and institutional variation encouraged, the foregoing factors must be considered. It will be well to re-examine the concept of granting credit "in terms of demonstrated educational competence" in the light of these facts. What does the term, "educational competence," really mean when applied to an *individual* veteran who requests that a *specific* institution evaluate *his* military experience? It means, in concrete terms, to what extent *this individual*, because of the experience he has had during his military service has satisfied the requirements for admission, or for a degree, as previously established by the faculty of *that specific institution*.

It follows, therefore, that, if the serviceman is to be allowed a fair amount of credit, he should be tested with the same examinations applied to other students. There is no necessity to use outside examinations to compare grants of credit made in one institution with those made by other institutions. The *valid* comparison is between the serviceman and other students within the institution, not in others. The allowances made by other institutions should be greater or less depending on variations in the purposes of the school and the curriculum of the student's choice. This practice of internal examining will guarantee equitable treatment for the serviceman and the maintenance of standards within the institution, the two matters educators and the public generally are concerned about. It is entirely unnecessary, therefore, to launch large-scale extramural testing programs to guarantee equity

for the serviceman and the maintenance of sound educational standards. Such programs may be of value in the validation of tests, but this purpose does not constitute a justification for urging their use for the evaluation of military experience. "Blanket examining" is not the necessary alternative to "blanket credit."

Many servicemen will have learned much miscellaneous knowledge, and may have developed in intellectual maturity, during their military duty. They will want to present this experience for appraisal by academic institutions in order that they may be properly located in the academic scale. The ACE test of General Educational Development can be used as an accurate measure, not only of educational development during military service, but, in the case of veterans who have not attended school for a number of years, of the residue of knowledge from earlier formal schooling. This examination will be useful in placing veterans at the proper educational level and in diagnosing educational strengths and weaknesses on the basis of which veterans can be guided into the courses most closely allied to their abilities.

The overwhelming proportion (more than 90 per cent) of active servicemen and veterans who have sought academic credit have based their requests on the completion of basic military training or on the specialized training of the service schools. Those who are familiar with these courses know that they deal mainly with technical military activities. Such general education as is included is for the purpose of providing the basic principles on which specialized instruction rests. This general education, and with few exceptions, the technical education, does not parallel instruction in civilian schools. *Moreover, the bulk of the instruction in the service schools is of high-school grade or lower.*

In the light of these facts it is clear that the evaluation of inservice education at the college level is by no means going to be the gigantic problem that those unfamiliar with the training programs of the armed services have expected. The percentage of veterans who will actually have had military instruction worthy of college credit and who will want such credit will be small indeed, certainly not over five per cent.

It is the hope of all well-meaning members of the academic fraternity that credit for military experience will be based on actual educational accomplishment. The plan here proposed avoids all the evils of "blanket credit" by placing responsibility on each institution to determine the amount of credit that should be awarded to each individual veteran. It also maintains the standards of the college by requiring that the amount of credit granted depend upon the extent to which the experience the serviceman has had satisfies the established requirements for a degree, regardless of the amount of credit other institutions allow for similar experiences. Thus institutional differentiation of function is encouraged and restrictive and harmful standardization prevented. Moreover, it focuses the attention of faculty members on the fact that educational goals may be reached through experiences other than those provided in the classroom, and that their own examinations should measure educational growth toward these objectives irrespective of the manner in which they are reached. Throwing the responsibility for the appraisal of military training on college faculties, where it obviously belongs, will also have the salutary effect of provoking a thoroughgoing reconsideration of the purposes of education, and a general improvement in examination procedures.

It must be admitted that the plan proposed offers greater opportunity for the granting of excessive credit for military training than a plan under which all institutions would give a common examination and allow credit on the basis of established national norms. Under the plan proposed here some institutions will be excessively generous to servicemen for patriotic or commercial reasons, or both. Those who have examined a number of institutions know that wide differences in academic standards exist in peacetime. But the accreditation of military experience and the reform of unsound educational practices are two different things. They should not be confused. The possibility of a few instances of malpractice or honest error in judgment is not sufficient reason for the establishment of a system of extramural evaluation which may, by invidious comparison and false standards, place the colleges of the country in a Procrustean Bed of educational uniformity.

Pharmaceutical Engineering*

ARTHUR F. PETERSON, Ph. G., B. S., Ph. C.

Schering Corporation, Bloomfield, New Jersey

The progress that pharmacy and pharmaceutical education have experienced in the past twenty years has been paralleled only by the advancement in chemistry. Pharmacy is a profession requiring a broad knowledge of various of the pure sciences. It may be viewed as the hub of a wheel whose spokes constitute chemistry, physiology, pharmacology, bacteriology, anatomy, biochemistry, physics and mathematics.

The "corner drug store" is no longer the real symbol of pharmacy. There is an old slogan "the pharmacist is more than a merchant." While it does still ordinarily apply, it is also occasionally the case that the drug store "merchant" is not a pharmacist. The newer pharmacist is more the scientist, is more the professional man who wants to practice professional pharmacy. The pharmacist is not only a compounder or manufacturer of potent drugs. He is, as well, a chemist and consulting pharmacologist. Upon him the physician relies for much of his information about the action, the uses, and the availability of drugs both old and new. That is as it should be. That is the pharmacist's proper function.

A pharmacist today is required to be graduated from a four year course of a college of pharmacy accredited by the American Council on Pharmaceutical Education. As in the case of a graduate physician, who is required to spend at least a year of internship in an approved hospital, the pharmacist also must spend a year of apprenticeship or internship in a prescription laboratory as prescribed, or especially accredited for the purpose, by the state board of pharmacy before he can be licensed. But, while only four years of college work are required, increasing numbers of students are continuing their pharmaceutical studies to five and seven years to earn degrees of Master of Science or Doctor of Philosophy in one of the specialized fields of pharmaceutical science. Obviously, pharmacy offers careers in which those men and women are vitally interested.

*See explanatory letter by the author in Gleanings from the Editor's Mail.

When we speak of pharmacy, we must think of it in the broad sense. The professional prescription pharmacy which confines its activities to prescription compounding and dealing in physicians' and sick room supplies, must not be considered alone to define pharmacy. The large scale manufacturer of medicinal substances such as chemicals, biologicals, tablets, pills, capsules, parenteral solutions in ampules or vials, buffered eye solutions, ointments, suppositories, powders, syrups, emulsions, tinctures, fluid extracts, and proprietary medicinals, is merely a pharmacy grown to large proportions. Both are integral parts of the "drug industry."

The "manufacturer" requires highly specialized technicians in various positions such as chemical research, pharmaceutical research, pharmacological research, biological research, chief chemist, engineer, plant superintendent, production manager, production foreman, purchasing agent, advertising manager, sales manager and other executive positions wherein an excellent knowledge of the sciences is necessary or at least desirable. The pharmaceutical engineer may better qualify for any of these by education and subsequent experience, especially assuming that he has also served the necessary internship to fulfill the requirement for registered pharmacist and has gained good, first-hand knowledge of retail pharmaceutical operations and thinking.

But what is a pharmaceutical engineer? As outlined in the suggested curriculum given later the pharmaceutical engineer would have completed the requirements for both Bachelor of Science in Pharmacy and Bachelor of Science in Chemical Engineering, together with sufficient additional work in chemistry to qualify him for chemical or pharmaceutical research. The course should be one comprising six full college years of nine months each.

A course of such length is becoming increasingly popular in various branches of education and, in fact, quite necessary for graduates to enable them to qualify for the problems with which they will be confronted in the ever more technical and highly educated world in which we live. This is evident by the increase in number of five and six (and more) year courses now available, apart from those leading to the M. S. and Ph. D. degrees, such as:

Five year courses in engineering (aeronautical, chemical, electrical, agricultural, civil, mechanical) with business administration, leading to the B. S. degree.

Five year combined course in pharmacy and business administration leading to two degrees, B. S. in Pharmacy and Bachelor of Business Administration.

Five year course in law (6 years in some universities).

Five year course in dentistry.

Six year combined course in arts and architecture leading to degrees of Bachelor of Arts and Bachelor of Architecture; and in arts and law leading to the degrees of Bachelor of Science in Law and Bachelor of Laws.

Seven year combined course in arts and law leading to the degrees of Bachelor of Arts and Bachelor of Laws; in business administration and law leading to the degrees of Bachelor of Business Administration and Bachelor of Laws; and in arts and dentistry leading to the degrees of Bachelor of Arts and Doctor of Dental Surgery.

Eight year course in science and medicine leading to the degrees of Bachelor of Science, Bachelor of Medicine, and Doctor of Medicine; and in arts and medicine leading to the degrees of Bachelor of Arts, Bachelor of Medicine and Doctor of Medicine.

The chemical engineering course at Cornell University has been on a five year basis since 1938. Students who enter its civil, electrical or mechanical engineering courses in or after the first academic year post-war will require five years' work for a Bachelor's degree, instead of the traditional four years.

I point to these extended courses to call attention to a trend to lengthened curricula. Until comparatively recently the only courses offered beyond the four year A. B. and B. S. degrees were the five and seven year courses leading to the Master of Science and Doctor of Philosophy or Doctor of Science degrees, respectively. Scientific progress in industry has made four-year college courses inadequate in considerable degree to train the graduate to cope with the problems and knowledge required in the job today compared to that of yesterday. Increased "competition" among graduates of four year courses has lead many students to decide at the outset to pursue more extended courses, and has made many graduates feel that they must return to college for additional or advanced studies so as to be better prepared than those who graduate from four year courses.

Pharmaceutical manufacturers, as a result of these great advances scientifically, have become centers of scientific research as well as manufacturers of complex chemicals and medicinal substances. They require highly and broadly trained scientists in more capacities than ever before. The chemist and chemical engineer are not nearly so well qualified to cope with pharmaceutical problems as are the pharmacist, pharmaceutical chemist, or pharmaceutical engineer. On the other hand, the pharmacist does not have the engineering training necessary to handle many problems confronting the chemical engineer, yet both are graduates of four year college courses unless they have also pursued postgraduate study. Therefore, pharmaceutical manufacturers are seeking individuals who are both pharmacist or pharmaceutical chemist and chemical engineer. Such qualifications are acquired by the Pharmaceutical Engineer in his pursuit of the curriculum which follows, as therein are combined the courses in pharmacy and chemical engineering.

Not all colleges of pharmacy are in position to offer the course in Pharmaceutical Engineering because some are not divisions of a university wherein engineering is offered on the same campus. State universities such as Purdue (Indiana), Wisconsin, Minnesota, Michigan, Maryland, Ohio, Iowa, Nebraska, Washington, California, Texas, Florida and Columbia (New York) can offer such a combined course. Some pharmacy colleges may make necessary arrangements with nearby engineering colleges to teach the necessary engineering subjects, assuming that both offer the advanced subjects required. Such a plan is being developed by the Philadelphia College of Pharmacy and Science, an institution that has for many years given a substantial and practical course in manufacturing pharmacy.

The suggested curriculum in pharmaceutical engineering has many advantages over the individual curriculum in pharmacy and in chemical engineering. It may give the pharmaceutical engineer a greater sense of security because he will have a wider range of employment possibilities from which to choose, or to fall back upon in case of necessity. He is a better educated man in his general field. That is, if he should wish to practice pharmacy he has the satisfaction and advantage of having the additional engineering training; if he should wish to practice chemical engineering whether with-

in or without the pharmaceutical industry, he has the advantage of the extra pharmaceutical and medical knowledge which enables him to apply broader principles to his work to make him more efficient and more versatile than the chemical engineer. He has the satisfaction of being better prepared; his work will be more interesting. He is in better position to command greater earnings, to develop his intellectual powers, to develop along with his profession, to gain leadership in the pharmaceutical or chemical industry.

Since I first wrote on the subject in 1931¹ increasing interest has been shown in pharmaceutical engineering. Student interest at that time was especially apparent. Letters were received from graduates of pharmacy colleges asking where a course in pharmaceutical engineering was offered. Pharmaceutical manufacturers have expressed the desirability of such a course and the need for men of such training. Purdue University, on the initiative of Dr. Glenn L. Jenkins, dean of the college of pharmacy, has taken the lead among colleges in encouraging students to combine pharmacy with chemical engineering subjects. However, the work in the engineering branch of the curriculum cannot be given most effectively as postgraduate work after completion of the four year pharmacy course because of the courses prerequisite to more advanced subjects which are essential and which must be pursued at an earlier time in the curriculum. For the same reason requirements of the pharmacy curriculum cannot be pursued satisfactorily, or at least not most advantageously, by the graduate chemical engineer because of the time that would be unwisely spent in arranging the courses in the order that one course is prerequisite to another.

The subjects designated in the suggested curriculum in pharmaceutical engineering given below would be essentially divided between the colleges of a university as follows:

Arts College	48 credit hours	(a)	(c)
	11 credit hours		(c)
Pharmacy College	92 credit hours	(a)	(c)
Chemistry Department	40 credit hours	(a)	(b) (c)
	47 credit hours		(b) (c)

¹Peterson, Arthur F., Ruth, R. J., *Pharmaceutical Engineering*, J. A. Ph. A. Vol. XX, No. 9, pp. 912-918 (Sept.) 1931.
(Copyrighted)

Pharmaceutical Engineering

181

Engineering College	58 credit hours	(d)
TOTAL.....	295 credit hours*	

* Quarter system

- (a) Subjects usually comprising the four year pharmacy course.
- (b) Subjects also taught in the chemistry department.
- (c) Subjects usually taught in colleges of pharmacy where graduate work to the Ph. D. degree is offered.
- (d) Subjects taught exclusively in the engineering college.

This division of subjects would indicate that the direction of the course in pharmaceutical engineering should logically be assigned to the dean of the college of pharmacy and be offered as one of the pharmaceutical curricula.

SUGGESTED CURRICULUM COURSE IN PHARMACEUTICAL ENGINEERING¹

	First Year	Credit Hours
<i>Fall Quarter</i>		
English Composition		3
Trigonometry		3
Inorganic Chemistry and Laboratory		4
Botany		3
Shop Practice (Pattern Shop)		2
		<hr/>
		15
<i>Winter Quarter</i>		
English Composition		3
College Algebra		3
Inorganic Chemistry and Laboratory		4
Botany		3
Shop Practice (Foundry)		2
		<hr/>
		15
<i>Spring Quarter</i>		
English Composition		3
Analytical Geometry		3
Inorganic Chemistry and Laboratory		4
Zoology		4
Shop Practice (Forge)		2
		<hr/>
		16

182 *American Journal of Pharmaceutical Education*

<i>Second Year</i>		
<i>Fall Quarter</i>		<i>Credit Hours</i>
Differential Calculus		4
Physiology		4
Organic Chemistry and Laboratory		4
*Modern Language		3
Drawing and Descriptive Geometry		2
		<hr/>
		17
<i>Winter Quarter</i>		
Integral Calculus		4
Physiology		4
Organic Chemistry and Laboratory		4
*Modern Language		3
Drawing and Descriptive Geometry		2
		<hr/>
		17
<i>Spring Quarter</i>		
Bacteriology, General		4
Organic Chemistry and Laboratory		4
*Modern Language		3
Drawing and Descriptive Geometry		2
**Elective		3
		<hr/>
		16
<i>Third Year</i>		
<i>Fall Quarter</i>		<i>Credit Hours</i>
†Physics (Mechanics) and Laboratory		4
Bacteriology, Pathogenic		4
Qualitative Chemical Analysis		4
Principles of Pharmacy and Laboratory		4
General Pharmacy		2
		<hr/>
		18
<i>Winter Quarter</i>		
†Physics (Electricity) and Laboratory		4
Quantitative Chemical Analysis		4
Principles of Pharmacy and Laboratory		4
Materia Medica and Pharmacognosy		4
		<hr/>
		16
<i>Spring Quarter</i>		
†Physics (Heat, Sound and Light) and Laboratory		4
Quantitative Chemical Analysis		4
Materia Medica and Pharmacognosy		4
Principles of Pharmacy and Laboratory		4
		<hr/>
		16

*Fourth Year**Fall Quarter*

	<i>Credit Hours</i>
Technical Mechanics (Statics)	3
Dispensing Pharmacy I	4
Physical Chemistry and Laboratory	4
Physiological Chemistry and Laboratory	3
Public Health, Hygiene and Sanitation	2
	<hr/>
	16

Winter Quarter

Technical Mechanics (Dynamics)	3
Dispensing Pharmacy II	4
Food and Drug Analysis	3
Physical Chemistry and Laboratory	4
Pharmaceutical Organic Chemistry (Organic Medicinal Products)	4
	<hr/>
	18

Spring Quarter

Pharmacology and Laboratory	4
Dispensing Pharmacy III	4
Food, Drug & Water Analysis	4
Physical Chemistry and Laboratory	4
	<hr/>
	16

*Fifth Year**Fall Quarter*

	<i>Credit Hours</i>
Strength of Materials and Laboratory	4
Instrumental Methods of Analysis and Control	3
Electric Power	3
Hydraulics and Laboratory	4
Chemical Engineering Economics	3
	<hr/>
	17

Winter Quarter

Heat Engines	4
Instrumental Methods of Analysis and Control	3
Electric Power	3
Colloidal Chemistry	4
Elective	3
	<hr/>
	17

Spring Quarter

Heat Engines	3
Unit Processes	3
Manufacturing Pharmacy (Industrial)	4
Machine Design	3
Elective	3
	<hr/>
	16

Sixth Year

<i>Fall Quarter</i>	<i>Credit Hours</i>
Unit Process Problems	4
Applied Electrochemistry	3
Advanced Organic Chemistry and Laboratory	4
Industrial Inorganic Chemistry	4
Chemical Manufacture (Inorganic)	3
	<hr/> 18
<i>Winter Quarter</i>	
Design of Chemical Equipment and Plants	3
Advanced Organic Chemistry and Laboratory	4
Industrial Organic Chemistry	4
Chemical Manufacture (Organic)	3
Pharmaceutical and Chemical Literature	2
	<hr/> 16
<i>Spring Quarter</i>	
Design of Chemical Equipment and Plants	3
Advanced Organic Chemistry and Laboratory	4
Thesis	9
	<hr/> 16

The course in pharmaceutical engineering offers one of the most promising futures for the young man or woman who is really scientifically inclined and who has an aptitude for commerce as well. The pharmaceutical engineer's possibilities for employment are broad as he will fit wherever a pharmacist, chemist or chemical engineer is required. As a pharmacist he will have better opportunities to enter into business for himself in any of the pharmaceutical branches. He will have an advantage over the chemist or chemical engineer because of his more extensive training in that branch as well as in the broader pharmaceutical field. Wherever chemical, chemical engineering and pharmaceutical knowledge, individually or combined, are required, he will qualify.

*Students who have credit for two years of high school modern language should take electives instead of modern language in the second year. A full year of zoology is especially recommended. Other subjects of value to the pharmaceutical engineer are economics, plant management, personnel management, labor problems, economic history of the United States, general accounting, cost accounting.

**A third term of physiology is recommended.

†One year of college mathematics prerequisite to these courses in physics.

‡Those students who wish to pursue additional courses during summer sessions or during the regular sessions in case they already have credits for certain subjects, are urged to pursue as much work as possible in biological chemistry and pharmacology.

§Substantially the curriculum and plan outlined above may be secured at Purdue University, Lafayette, Indiana, one of the foremost institutes of technology.

The pharmaceutical engineer may find employment in, or may engage in the industries manufacturing any of the following products: pharmaceuticals, chemicals, biological products, cosmetics and perfumes, plastics, paint and varnish, soap, sugar refining, wood distillation, explosives, textiles, rubber, petroleum products, fertilizers, dye-stuffs and others.

SUMMARY

Pharmaceutical engineering is suggested for the name of a curriculum combining the courses of pharmacy and chemical engineering because pharmacy includes chemistry as one of its important divisions. It is descriptive of what otherwise would constitute a combination of both degrees: Bachelor of Science in Pharmacy and Bachelor of Science in Chemical Engineering. There would be no possibility of the field becoming overcrowded so long as there is a place for a chemical engineer. Otherwise, the pharmaceutical engineer can always fall back upon his professional standing as a pharmacist or chemist. The pharmaceutical engineer will carry more prestige as well as enhance the prestige of the pharmaceutical and chemical profession, and more easily assume leadership in the pharmaceutical and chemical industry.

Pharmacy and the National Welfare*

H. EVERT KENDIG

Temple University, School of Pharmacy

I appreciate deeply the honor which you have conferred on me tonight; I am fully aware of the distinction which accompanies the Remington Medal. No one so honored can contemplate the life and work of the former recipients without being highly complimented that his services to pharmacy have been deemed worthy of such recognition. That the Remington Medal Committee looked with favor upon my work makes me very happy indeed.

I recognize the kindly intent which prompted the speakers to use words which, while pleasing to vanity and pride, are all

*The 1944 Remington Medal Address.

too flattering for scientific accuracy. Due regard to the verities requires some clarification of the record, and especially as it refers to my part in placing a Pharmacy Corps in the United States Army.

When our country started to arm for participation in the current conflict, the National Committee on the Status of Pharmacists in the Government Service, representing the American Pharmaceutical Association, American Association of Colleges of Pharmacy, National Association of Boards of Pharmacy and the National Association of Retail Druggists, was charged with the duty of arranging for pharmacy's full participation in the defense of the country. As chairman of this committee I was blessed with the help of an unusually able personnel and with the full support of the four national associations we represented. We secured the cooperation of every state, county and municipal pharmaceutical society in the country, as well as public spirited lay associations such as the American Legion. The untiring efforts of these thousands of pharmacists and laymen brought about the affirmative vote for the Pharmacy Corps Bill.

Knowing the facts as I do, as far as the Pharmacy Corps effort contributed to my selection for this honor, I gratefully accept the Remington Medal but not just for myself; also, I receive it in behalf of the pharmacists of America whose devotion, cooperation and hard work resulted in the unanimous vote in both the House and the Senate, and the President's signature on a Pharmacy Corps Bill after 60 years of effort.

Those present who have followed the work of the Committee will recall that in its annual report submitted to the member associations in 1943, due acknowledgment was made of outstanding contributions to the effort by individuals and organizations. Time will not permit repetition tonight of that list of names and the specific labors performed, but I believe it appropriate to refer briefly again to two or three men whose work was particularly valuable. They were indispensable men.

Foremost among these was the late, beloved Dr. E. F. Kelly. He was my constant advisor and together we worked out the strategy and planned the campaign. Happy indeed would I have been had his life been spared for still more achieve-

ments in behalf of pharmacy; happy indeed would I be had he lived to participate in this program.

Also, I want to pay tribute to Congressman Carl T. Durham and to Senator Robert R. Reynolds, both of whom rendered invaluable services in the Pharmacy Corps fight. Congressman Durham and Senator Reynolds were members of the House and Senate Committees on Military Affairs, respectively, and their knowledge of the routine to be observed was most helpful in obtaining Congressional approval of the Pharmacy Corps legislation. Pharmacy owes a great debt of gratitude to them, and I am privileged on this occasion to express the thanks of myself and the members of my committee for their help in this connection. Congressman Durham would have been present tonight and taken part in this program had it not been that he expected to join the Congressional group now studying war operations in England and on the Continent. I wish he were present that I might share your acclaim with him.

After paying due regard to the amenities, it is customary on these occasions for the honored guest to discuss his philosophy of life, or to explain his ideas of why the universe ticks. The character of these acceptance speeches stems from the age of the individual who is being honored; if he has reached the time of the sear and yellow leaf, he will essay the role of historian and the address will be weighted with the backward look. On the other hand, if the speaker is still ascending the sunny slopes of life's mountain, he will have the forward look and attempt to peer into the future.

Chronologically I qualify as a historian; biologically I still have certain priorities on things to come. Therefore, in conformity to the traditional expectation, I shall talk about two subjects which appear to be fitting for the occasion,—the Pharmacy Corps effort of the past, and pharmacy's obligations under the premises in the future.

The Army and the Pharmacy Corps Legislation

For the historical aspect I shall say a few words about the conditions existing when we decided to ask Congress to place a Pharmacy Corps in the Army. This action was not taken until it became evident that we could not expect the Medical

Department of the Army to so organize the pharmaceutical service that it would protect the soldier in the use of medicines with the same safeguards enjoyed by him as a civilian under the protection of the pharmacy and drug laws of the forty-eight states.

The American Pharmaceutical Association had tried faithfully to bring about the desired changes in the Army procedure but without success. Former Congressional efforts had failed; our bills had never reached the floor of the House or Senate. They peacefully died in the files of committees. Notwithstanding these discouraging precedents, we were encouraged by our studies which showed that a number of forces operative during the earlier years had produced cumulative effects which converged and focused to our advantage with the beginning of the present national emergency.

Dr. Swain has stated that it was in 1885 that the American Pharmaceutical Association first sought to have a Pharmacy Corps established in the United States Army, and that successive committees, under successive chairmen, labored in vain to accomplish this end.

While I usually find myself in agreement with my good friend Dr. Swain, I cannot accept his version that the preceding committees or the preceding chairmen labored without results. It is true that the Pharmacy Corps objective was realized only in 1943, but there was a tremendous amount of constructive work done in the preceding years. These earlier efforts contributed much to a victorious conclusion, and fortuitous circumstances brought about a culmination of effort during my administration.

Also, during the nine years I served as chairman, I became more and more aware that the great improvement in pharmaceutical education weighed heavily in our favor. During much of the preceding period our educational program was in the process of evolution, and in fact, had only obtained recognition in academic circles a year or two before I became the chairman of the Committee. The most convincing argument presented by the Army in opposition to the Pharmacy Corps bills introduced in previous Congresses, was that the course in pharmacy did not meet the educational requirements established for the officer personnel of the Regular Army.

In 1936 the Surgeon General acceded to our importunities and approved our bill to commission 16 pharmacists for service in the Medical Administrative Corps. This was the first concrete evidence that we had overcome the objections to our educational program. The bill was passed by Congress at the request of the War Department, and while the officers were assigned to the Medical Administrative Corps, it was the first time in the history of the Regular Army that pharmacists were admitted to commissioned status because they were pharmacists. These officers were transferred to the Pharmacy Corps last year.

So, you see, in all of my negotiations with the Surgeon General and with the Congress, I had the advantage, not enjoyed by former chairmen and committees, of knowing that the pharmaceutical curriculum had been raised to standard collegiate levels, and that it was, therefore, no longer within the power of our opponents to look askance at pharmaceutical education.

Not only was the present excellence of pharmaceutical education a determining factor in bringing the Pharmacy Corps effort to a victorious conclusion, but I am convinced that we must look to pharmaceutical education as both the firmest foundation of pharmaceutical practice, and as the surest guarantee of pharmaceutical betterment in all respects. Superior education, too, will be the open sesame to participation in the broader social and political activities necessary on the part of all who believe in a democratic form of government if this nation is to continue to function under the constitution; indeed, I believe a crusading interest and participation will be necessary if the nation shall endure as a political entity having any resemblance to that form of government under which it has become the most powerful nation and the most beneficent nation the world has ever known.

The opposition of the Medical Department of the Army to any change was not supported by convincing or even reasonable argument. In refusing to place the drug function in the hands of pharmacists it proceeded contrary to the recognized system governing the employment of drugs in the cure of disease firmly established by one hundred years of precedent and practice. This procedure is for the physician to diagnose and prescribe and for the pharmacist to compound or provide the

remedy. Furthermore, the opposition in general, was arbitrary and uncompromising. This type of opposition, as is always the case, further nurtured the desire and developed the capacity of pharmacy to render a service so peculiarly its own.

This is a time of unrest and change. So many of our old institutions and methods are being discarded and replaced by new mechanisms of service that the request for a Pharmacy Corps in the Army did not startle Congress as on previous occasions. The many measures designed to effect profound changes in this country's social, political and economic life, receiving legislative consideration, or innovations imposed by executive order, had so conditioned Congress to change that our measure was received by many as a matter of course. It did not provoke the antagonism and opposition engendered by earlier legislative efforts by your committee.

Furthermore, a general mental attitude, the result of or fostered by the well-defined movement toward a leveling process in the country's social life and economic structure, was a favorable influence. This leveling process carries with it the implication that too great power has been exerted by some who, possibly by tradition, have been placed in positions of control, to the detriment of those not so fortunately situated.

The condition of the pharmaceutical service, to a considerable degree, grew out of the smallness of the Army in its early decades, as well as from pharmacy's lethargy and absence of an aggressive or even no policy at all. Pharmacy lacked vision during the first hundred years of the country's history.

I said the first permanent armed forces of the Republic were small. In 1784, Congress reduced the Army to one battery of fifty-five men and a detachment of twenty-five infantry soldiers. Influenced by the fear of standing armies, the government under the Articles of Confederation established a small army of seven hundred troops for one year's service; the same number was continued until after the adoption of the Constitution. Some of us remember the small standing army of 25,000 of our boyhood days.

In those years when an emergency arose, the physicians and surgeons assumed the duties in the Army which properly belonged to pharmacists. Vigorous, effective protest from the drug men was not forthcoming. Gradually the pharmaceu-

tical service came completely under the control of the members of the medical profession. When pharmacy grew in importance in keeping with the general progress in the medical sciences and turned to the armed forces, it was found that the medical men were in full charge of the drug function and had extended their control far beyond just limits.

The medical school curriculum has never trained its graduates for the manufacture or purchase, standardization, storage, compounding and dispensing of drugs, nor should it. Those are the functions of the pharmacist. The medical man majors in diagnosis and treatment; his drug knowledge is that of physiological action and its application. He may be skillful in the fields of pediatrics, obstetrics, ophthalmology or any other of the great divisions in his profession, but these branches of learning do not qualify him to replace the pharmacist in the ever widening area of drug knowledge and control. In fact, a knowledge of these sciences and arts precludes him from doing so. He cannot be a master of the one profession and have a practicing knowledge of the other also.

Bacon said, "Tempests in the State are commonly greatest when things grow to equality, as natural tempests are greatest about the equinoctia." Pharmacy had grown to equality in the field peculiarly its own, and the controversy we have just concluded was inevitable; the outcome was just as inevitable. The decision about who shall serve in a disputed province in a democracy is always resolved in favor of those best qualified by education, training and experience and who, therefore, are justly entitled to the opportunity. The opposite of this, the granting of positions or emoluments on the basis of favor or force is a characteristic of the totalitarian state and is the very thing we are fighting in Europe and Asia today.

The Future of Pharmacy and Pharmaceutical Education

History records the prominent part pharmacy has taken in the social and political advances achieved by this country during the past 100 years. During that period the education of the pharmacist was superior to that of the average or to that of most citizens, and clearer thinking and better planning and execution by him were to be expected. The profound influence exerted by pharmacists in every community, rural and

urban, had as its base this better education of the members of the profession. They had more facts at their command, and superior reasoning and directing power due to disciplinary study.

As I have said earlier in my talk, it is unfortunate that pharmacy did not keep in line with medicine when that profession adopted the progressive educational program of 1918 which introduced, among other higher standards, a requirement of general cultural education on the college level as a prerequisite for admittance to an accredited school of medicine.

Medicine took this advanced step at about the time there was a resurgence of interest in higher education, an interest stimulated by private and public universities offering opportunities for advanced education to any young man or woman regardless of their economic situation. The enrollments in colleges and universities went up in leaps and bounds.

It was this broadened interest in the humanities and their significance in the developing sociologic pattern which brought about new concepts of our duty to the so-called submerged tenth, and which resulted in much of the more recent progressive legislation.

Rational social and sound economic progress in the future will stem from better and broader education. The problems with which this country will be confronted will be solved only by a clearer vision of the interrelation of life's component parts and this can be brought about only by increased knowledge and its scientific application or utilization.

President Conant of Harvard University, in an address on the occasion of receiving the Priestly Medal, said: "If we in the United States in the post-war years are to live up to our responsibilities, we must foster all learning—accumulative knowledge, philosophy and poetry. To this end we must see to it that as far as humanly possible all the potential talent of the country in all these manifold activities is recognized at an early age and given adequate educational opportunity. Stepping out of my role as a chemist for a moment and speaking as an educator, this means a vastly increased support of public education—federal funds administered through the states

—and a much fairer distribution of educational opportunities at the college level.”

The strategic situation of the pharmacist and the peculiar nature of the service he renders the public, give him an extraordinary opportunity to mould public opinion and guide his contemporaries in sound thinking and constructive action.

However, if this profession is to exert an influence in public affairs comparable to that witnessed in former decades, it must offer or require of its practitioners a superiority in education comparable to the superiority enjoyed during those years.

Fifty years ago the two years of college training gave the pharmacist intellectual superiority over 99 percent of the people who addressed him from the other side of the prescription counter. That was the time when the number of college graduates in any small or limited area could have been counted on the fingers of one hand.

Today, in that same community, it is scarcely possible to cross the threshold of any even moderately well-to-do family without being greeted by at least one university graduate. The number of pharmacists has remained the same but the number of college graduates has multiplied many times since 1900. In the not far distant future, the chances are that the customer on the other side of the counter will have a standard four year college education. The pharmacist with his four-year degree will have equality but no longer will he enjoy the superiority he must possess to command the respect accorded him in former years.

The time has come for us to recognize the fundamental changes which have and are taking place in the theory and practice of this profession. Some of these changes result from increased scientific knowledge; some are caused by changes in drug economy incident to the industry adjusting its methods to the modern technology which has invaded the drug business and crowded out antiquated methods; and still other breaks in the established order are in conformity with the requirements of basic modifications of the procedure in the practice of medicine.

By way of illustration, our present information about the physiological activity of many substances and their specific

actions in definite quantities makes assay and standardization necessary—a business and legal as well as a moral obligation.

Regarding the second point I made, it is scarcely necessary to mention the economic waste if in each of the 58,000 pharmacies in the United States was made the relatively small quantity of each of the commonly used potent preparations and then assayed and standardized. In many instances the quantity desired would not be more than the volume required for assay. One manufacturer can and does make at one time enough of one of these preparations to satisfy the requirements of several thousand retail pharmacists. He, the manufacturer, performs one assay and makes one dose adjustment instead of the several thousand necessary under the individualized production.

We must stop thinking of pharmacy as referring only to the retail drug business; we must enlarge our vision and widen our horizon to include every procedure connected with the production and distribution of remedies and corrective agents. Included must be every function from obtaining the crude materials, their refinement and use in manufacturing medicinal products; then distribution to the wholesaler and on to the retail pharmacist, the hospital and the coming medical centre, and finally compounding and dispensing to the individual consumer. This sequence represents American pharmacy today. We must adopt this all-embracing conception of pharmacy to promote the unity of action required for the common good.

So many changes have taken place in the methods employed by the physician to cure and prevent disease that corresponding changes must take place in pharmacy. The advances in preventive medicine have canceled out many prescriptions and sick-room supplies which a generation ago required much of the time of the pharmacist. The prevention of malaria and typhoid fever by sanitary engineering removed a source of practice which will never return.

Diphtheria antitoxin and scarlet fever immunization and smallpox vaccination have transferred to the large biological laboratories the preparation of the substances now used to control these diseases. More recently the sulfa drugs and penicillin have removed from the list many diseases which

hospitalized, or confined to the sick-room for long periods of time, those who were so unfortunate as to be stricken by these heretofore yielders of large volumes of pharmaceutical practice.

The declines in the death rate during the current century have been notable in pneumonia, malaria, typhoid fever, scarlet fever, whooping cough, diphtheria, tuberculosis, dysentery and influenza. This decline is due largely to preventive medicine and the methods employed call for little service by the retail pharmacist. Diminished death rates, the result of other than preventive measures, are due to the employment of the modern chemical instead of the many complex prescriptions formerly relied upon or used empirically in the search for effective remedies. The development of modern rational, scientific treatments, with substances such as the sulfa drugs, penicillin and other chemo-therapeutic agents, has revolutionized the practice of pharmacy and of medicine alike.

Pharmaceutical education is too narrowly conceived to meet the requirements of present day conditions. A curriculum which produces a scientist well-trained for practicing what is commonly referred to as retail pharmacy, would not prepare the graduate for service generally in the broader field which I said must be recognized as the present and future field of practice.

I think in considering the requirements of ordinary practice today we might well ask ourselves whether an educational pattern somewhat hastily put together in 1932, is adequate or even adaptable to conditions existing in 1944. For my own part, I think the time has come for a constructive fact-finding survey of the pharmaceutical curriculum. As I have pointed out, there have been vast changes in medical practice, and these have brought about vast changes in pharmaceutical practice, and it may well be that these should have been met by a more responsive attitude upon the part of our schools of pharmacy.

I think a good many questions might profitably be asked with respect to our current courses of instruction. Time does not permit me to enumerate them, but broadly, could we defend the thesis that the pharmacy curriculum meets the current public health needs and provides for the fullest and most

helpful cooperation between pharmacy and medicine and the other public health professions.

I think constructive, searching inquiry will early indicate that the present curriculum includes much outmoded and needless material. In many respects the course content, especially in the professional subjects, has not changed much in the last several decades.

We are holding on to certain subject details whose claim to survival is largely historic. Much time is wasted on things of no practical value under present day conditions. They have sentimental value only.

If this task of elimination were done after a factual drug store survey, I believe the time and space would be found for building a modern curriculum expressive of modern needs.

Suggestive of my personal views, let me say that colleges of pharmacy need to greatly expand their work in the biological fields. Biology is assuming an ever increasing importance in medical practice, and it is entitled to a greater place in pharmaceutical education.

Well-equipped laboratories for the teaching of bio-chemistry, pharmacology, bio-assaying, and such other related subjects as may be necessary to a proper understanding of the drugs and medicines now coming from our research laboratories are urgently needed.

The mere fact that medical practice is becoming more and more dependent upon the research scientist leaves pharmacy no choice, if it is to survive as a professional pursuit and take its rightful place among the public health professions, except to put its educational house in order.

I am convinced, too, that one of our immediate needs is for more graduate work in pharmaceutical subjects. Under normal conditions, we have been turning out not more than 12 or 15 doctors of philosophy a year, and even this number has been sharply curtailed during the war.

Our new educational program must enable pharmacy to recapture the positions lost to the recipients of higher degrees from the old line universities and the colleges of liberal arts and sciences. An anomalous and embarrassing situation will

exist just so long as schools of pharmacy do not supply the staffs for research, control, assay, standardization, and for pharmaceutical, biological and chemical drug manufacture in all of its ramifications.

It seems inevitable that there will be an enlarged demand both upon the part of colleges of pharmacy and the drug industry for men with high graduate degrees, if pharmaceutical education and the drug industry are to meet their responsibilities. Many of our colleges of pharmacy were operating with minimum teaching personnel before the war, and will be faced with the necessity of building up their teaching staffs to acceptable levels, once the war is over.

The same situation obtains in the manufacturing drug industry. The demand for men who have completed graduate work in their fields is bound to be acute, and, under existing facilities this demand cannot be met. But, these men must be made available if pharmaceutical education is not to deteriorate and the drug industry become seriously hampered in its research development phases.

I should like to suggest that a joint committee of the drug industry and of pharmaceutical education be appointed to study the graduate personnel requirements of pharmaceutical education for the next several years, and the graduate personnel requirements of the drug industry; and to further study the facilities available in our colleges of pharmacy and to plan for their necessary expansion and improvement. If such studies could be made, graduate work could be developed in response to actual needs.

This study would enable us to maintain a proper balance between the requirements of both the retail and industrial branches of the profession. During recent years there has been a tendency on the part of the high scholarship graduates to accept employment with the manufacturers. A planned program would provide for industry without depleting the supply of superior graduates needed in retail practice.

I have been acutely aware of this need for a better graduate program for a long time; in fact, I have recommended to the President and Board of Trustees of Temple University that a graduate school of pharmacy be added to the university ensemble. My plans call for complete divorcement of gradu-

ate work from the undergraduate school and faculty. The graduate school would be separately housed, have its own faculty and be presided over by its own dean.

I have refrained from talking about pre-college work for entry to a school of pharmacy. In the annual address as president of the American Association of Colleges of Pharmacy in 1941, I recommended that plans be made for this increase in entrance requirements to become effective at the earliest practicable time. I believe that that practicable date will come when the schools of pharmacy have replaced by graduation the practitioners lost by pharmacy because of the war effort and its interference with the enrollment of students, and with the educational process.

In conclusion, may I thank all who have had a part in this program. When Benjamin Franklin represented the colonies in France during the Revolutionary War, he wrote a letter to General Washington from which I quote:

"Should peace arrive after another campaign or two, and afford us a little leisure, I should be happy to see your Excellency in Europe. You would, on this side of the sea enjoy the great reputation you have acquired. Here you would know, and enjoy, what posterity will say of Washington. For a thousand leagues have nearly the same effect with a thousand years."

Philadelphians and New Yorkers are in agreement that in many respects, Philadelphia is a thousand leagues from New York. Therefore, I am sure my deep sincerity will be evident in my thanks to the New York Branch of the American Pharmaceutical Association for arranging this dinner, and for making possible the pleasant and delightful illusion of what posterity will say after a thousand years.

In order to aid the movement for better relations between professors of pharmacy and the public, Temple University has scheduled a series of five lectures on public relations to be given during the fall semester.

Last fall the shortage of cigarettes was more important to some congressmen than the shortage of ammunition. Anyhow, they "investigated the cigarette situation first."—John W. McPherrin.

Materials and Outline for a Short History of Pharmacognosy

GEORGE URDANG

American Institute of the History of Pharmacy

There is no doubt: American pharmacy, at least as to its representative men and groups, has by now reached the second stage of history consciousness. The more or less occurrent individual and vague interest of earlier times has become general, definite and permanent. What we are concerned about now is the best possible method to accomplish the task in question, namely, research, writing and teaching in the field of the history of pharmacy and its basic sciences.

Captain Louis H. Roddis' article "Materials and Outline for a Short History of Pharmacognosy," published in the last issue of this *Journal* (IX, 1945: 19), suggesting and giving advice for such a performance as to the most pharmaceutical of all basic sciences of pharmacy, is but another convincing proof of this trend.

Captain Roddis is no new hand in the field. He has taken pleasure in the study of pharmaceutico-historical subjects for a long time and, being a member of the American Pharmaceutical Association for almost two decades, he has, in the course of time, presented quite a number of interesting papers to the Historical Section of the Association. He is the author of "A Short History of Nautical Medicine" (1941), and quite recently has been officially entrusted with the important and responsible task of compiling (or of supervising the compilation of) a history of medicine in the U. S. Navy during the present war.

It is understood that pharmacy receives advice with respect and gratitude from a man so well versed, and I do not know of any better (and more fruitful) way of expressing this gratitude to Captain Roddis than by a sincere endeavor to follow up his indications.

Giving advice and making suggestions is of necessity short and in detail highly selective. That may not always be recognized. It is for this reason that Roddis' "Materials and

Outline for a Short History of Pharmacognosy" calls for some supplementary notes.

In his "materials" Roddis mentions Dioscorides as "the first source to which a prospective author should turn his attention." In his "outline," however, he reserves a section of the suggested history to "pharmacognosy among ancient and primitive peoples, references to it in the Bible and among the Egyptians, Assyrians and Phœnicians." Hence the prospective author, before starting with Dioscorides will have to give consideration to the publications of Campbell Thompson on Assyrian medicine, to the Egyptian papyri, especially those named after Georg Ebers, Hearst and Edwin Smith, and to the extensive literature on drugs referred to in the Bible. Even as to Græco-Roman authors which we would call today pharmacognosists, the way to Dioscorides goes over the Hippocratean Corpus and Theophrastus.

It is correct that there is little original material from the time of Dioscorides until the Renaissance. There was, however, much organizing and theoretizing and there were additions to the materia medica requiring at least some explanation even in a short history of pharmacognosy. In my opinion Aulus Cornelius Celsus, the man who brought the first Latin nomenclature of drugs into being, and Scribonius Largus, who gave the first definition of opium, should not be entirely overlooked. The same holds true for old man Galen whether we regard him a pharmacognosist or not. Finally some mention should be made of the great compilers of pre-medieval times, especially of Paulus Aeginata. There are, by the way, excellent translations into English of the Hippocratean Corpus by W. H. Jones, London-New York 1923, of Celsus' *De Medicina* by W. Spencer, London-Cambridge, Massachusetts, 1935-1938, and of Paulus Aegineta's Seven Books by Francis Adams (See G. Urdang, Pharmacy in Ancient Greece and Rome in *Am. Journ. Pharm. Educ.* VII, 1943: 160-173).

It is certainly accidental that the part played by the Arabs in the development of the materia medica has not even been alluded to by Roddis. This influence has to be referred to in a history of pharmacognosy, however short this history may be. The names of Rhazes, Avicenna, Ibn al-Baitar, Ibn Serafiun (Serapion Jr.), to mention only the most important rep-

representatives of Arabian medicine and pharmacognosy between the ninth and thirteenth centuries, must be given a place in such a history quite as well as that of the mysterious Mesue Jr., whose work was a kind of crowning of Arabian drug therapy although his Arabian name was in all probability a fake and his writings of Occidental origin. Tschirch not only states that the Arabs "have augmented the European materia medica with many new drugs" but that "it is very doubtful whether pharmacy would have developed the way it did if European medicine would have remained free from this influence."

If we follow Roddis in paying our respect to the Anglo-Saxon Leech books, then the *Physica* of the Abbess Hildegard von Bingen (1098-1179) is deserving undoubtedly of the same honor, and before coming to the time of the Renaissance, mention has to be made at least of the School of Salerno, the *liber de simplici medicini*, called also *circa instans*, compiled by the Salernitan Matthæus Platearius, of the *regimen sanitatis* and of the so-called "*Alphita*," according to Tschirch "one of the most important drug lists . . . offering a picture of rare completeness of the late-medieval knowledge of drugs." Whether or not the books of Mattæus Sylvaticus and Simon Januesis, both living about 1300, have to be referred to in a short history of pharmacognosy, may be a matter of discussion. That cannot be said, however, of Pietro Andrea Matthioli's famous commentary on Dioscorides which was published in Italian in 1544 and in Latin in 1554 and from then on in about forty editions and in many languages. This book meant the revival and modernization of old Dioscorides and has kept up his influence for another quarter of a millenium. It described many vegetable drugs for the first time in detail and can quite as little be passed by in a history of pharmacognosy as the late and past medieval herbals, for instance those of Fuchs, Brunfels and Bock and the English sixteenth century herbals.

The high respect paid by Roddis to Garcia da Orta is undoubtedly justified. It is, by the way, an early love to which Roddis is returning in his praise of da Orta. His first paper presented at a meeting of the American Pharmaceutical Association (1929), bore the title "Garcia Da Orta and the First Description of Asiatic Drugs." Whether, however, da Orta can

be considered as "the real cornerstone of modern pharmacognosy" seems debatable. Although giving the work of Da Orta a full measure of praise, Tschirch, for instance, does not draw any such conclusion. According to him Valerius Cordus, Nicolas Monardes and Carolus Clusius have to be regarded as the "*patres pharmacognosix*" proper. It is Carolus Clusius (1526-1609), the man who rearranged and translated into Latin the Portuguese original of Garcia da Orta's *colloquios dos simples*, whose *exoticorum libri decem* Tschirch calls "the essence of pharmacognosy" as far as non-European drugs are concerned and "one of the most important documents for the history of our branch of science," *i. e.*, pharmacognosy.

As far as the Western hemisphere is concerned, Nicolas Monardes' publications on drugs "*de nuestras Indias Occidentales que sirven en medicina*," the first systematic reports on American drugs ever published, are undoubtedly of greater importance than the book of Garcia da Orta. Monardes' work, too, was translated into Latin by Carolus Clusius shortly after the appearance of its individual parts and finally included in Clusius' *exoticorum libri decem*.

There is quite a gap between Garcia da Orta, the only representative of the time of the Renaissance (and the beginning of the renaissance of pharmacognosy) mentioned by Roddis, and the next name he thinks important in the history of pharmacognosy, that of the great botanist Linné (Linnæus). This gap should be filled by referring at least to P. Pomet's *histoire générale des drogues*, N. Lemery's *dictionnaire ou traité universel des drogues*, Etienne François Geoffroy's *tractatus de materia medica* and W. Lewis' book called *An Experimental History of the Materia Medica*.

It is the work of Th. W. C. Martius that Roddis mentions as "the next most important milestone in the history of pharmacognosy" after Linné. It was, however, in 1820, *i. e.*, twelve years before the publication of Martius' *Grundriss der Pharmakognosie des Pflanzenreiches*, that the French pharmacist, Nic. Jean Baptiste Gaston Guibourt, published his *histoire naturelle des drogues simples* which according to Tschirch was "of influence for a long time in Germany also (for instance on Martius)." Tschirch furthermore characterizes the place of Guibourt in the history of pharmacognosy as follows:

"Guibourt took up where the druggist Pomet had left off and saved pharmacognosy for pharmacy. One can say: he secured the separation of pharmacognosy from pharmacology and put the former on her own feet."

Such a testimony from such an authority cannot be overlooked.

"The transition from this [Martius'] book to the works of Tschirch, Flückiger, Hanbury, Greenish and Rusby," says Roddis, "brings the history of the subject down to our own times." These names are certainly thought to be representative, not exclusive. Otherwise one would miss quite a lot of names, for instance that of the English Pereira and of several Americans. In a recent letter, Professor Elmer Wirth mentioned as "great American pharmacognosists" besides the only Rusby listed by Roddis, "Schrenk, Maisch, Bastin, Holm, Wall, Schneider, Kraemer and Schlotterbeck." There may be added the names of Jacob Bigelow, Rafinesque and John Uri Lloyd, to speak only of the dead and not of the living.

In concluding his listing of "materials," Roddis finally mentions the name of Cl. R. Markham as notable in the history of pharmacognosy not only because of the beneficial effect of his "transplantation of the cinchona tree from South America to India," but especially because of the stimulation of the interest in the production and cultivation of medicinal plants brought about by Markham's bold undertaking. Roddis' statement that the production and cultivation of medicinal plants "forms, or should form, a subdivision of pharmacognosy" certainly meets with the approval of all concerned. It has, however, very little to do with Markham. It was in the botanico-pharmaceutical gardens in Europe from the fifteenth century on and in North America since the eighteenth century that systematic cultivation of medicinal plants was undertaken which finally led to organized methodical investigation, and it is these attempts that have to be given a place in any history of pharmacognosy. Even as to the cultivation of the cinchona tree outside of South America, the transplantation by Charles Ledger and Manuel Incra Manuami (1865) brought much better results. Markham had merely the good luck of better publicity.

In his "outline" following the listing of "materials" for a short history of pharmacognosy, Roddis recommends a well

illustrated initial section devoted to the great pharmacognosists and to accounts of their work. In this the "outline" differs from the arrangement in Tschirch's historical part of his gigantic *Handbuch der Pharmakognosie* where the biographical notes, portraits, pictures of title pages *etc.*, and detailed accounts of the work of the men concerned are not dealt with in a special section but in connection with the general development. Otherwise, however, there is quite a congruence between the "outline" of Roddis and the arrangement in the standard work of Tschirch.

In the second (revised) edition of his great book, Tschirch starts Volume I¹, after some introductory discussion of the concept and the objects of pharmacognosy, with what he calls "pharmacoergasy" (ἐργασία = culture), meaning the cultivation, harvesting, *etc.* of crude drugs. He continues with a chapter on "pharmacoemporía" (ἐμπορία = wholesale), meaning the commercial side of pharmacognosy and dealing with tradeways, treatment of drugs in the ports of import, figures of production and export *etc.*, and proceeds to what he calls "pharmacodiakosmy" (διακοσμεῖν = to sort), meaning trade qualities of drugs and modes of packing. A critical presentation of pharmacognostical systems, a bibliography and a discussion of the teaching of pharmacognosy, of applied pharmacognosy and finally of the description of drugs conclude the first part of volume One. The second part of volume I (I²) is devoted to pharmacobotany, pharmacozoology (author L. Winkler), pharmacochemistry, pharmacophysics, microphotography and finally a bibliographicon which, compiled by J. A. Häfliger and not restricted to pharmacognosy, consists of brief biographical notes on men who have been of significance in each branch of pharmacy.

In volume I³, finally, Tschirch presents what he calls "pharmacohistoria" followed by chapters on "pharmacoethnology" and "pharmacoetymology." While in the first edition (1910) Tschirch signed as the sole author, he shared in the second (1933) the honor and responsibility with Edmund O. von Lippmann, the author of the most profound history of alchemy, a history of sugar, a history of bismuth, a history of

*The author of these lines had the privilege of earning his doctor's degree (Dr. of Science, University of Halle-Wittenberg) under the late E. O. von Lippmann on the basis of a pharmaceutico-historical thesis.

spontaneous generation, etc., etc.* Dealing in 44 chapters and on about 1000 pages with all possible subjects and aspects of pharmacognostical history throughout the ages, this "pharmacohistoria" together with the notes (and even chapters) of historical interest spread over the entire handbook (*"Handbuch"*) represents an archive of facts and evaluations of an amazing richness if not even completeness and of absolute uniqueness in the field concerned.

True, Tschirch himself refused to call his survey a "history of pharmacognosy." He called it "a guide to the sources with connecting [explaining] text" (*"Führer zu den Quellen mit verbindendem Text"*) and "bricks for the foundation of a history of pharmacognosy" (*"Bausteine für eine Geschichte der Pharmakognosie"*). Since the author of these lines had the privilege of talking over the subject with Tschirch several times and at some length, he is able to state that it was partly for reasons of a proper systematics that Tschirch hesitated to give his admirable historical survey, of which he was justly proud, the title "history of pharmacognosy." He differentiated between a history of pharmacognosy which in his opinion had to be a history of all attempts at collecting, organizing, systematizing and teaching knowledge about drugs of vegetable and animal origin, and a history of the objects of pharmacognosy, i. e., of the drugs and medicinal plants as such. Since his survey covers more or less both fields without any distinct differentiation, he thought the title "history of pharmacognosy" inadequate and chose the more sweeping Græco-Latin heading "pharmacohistoria."

Nevertheless, to us heirs and beneficiaries of the tremendous work of Tschirch, these subtleties, however justified they may be, are of minor if of any importance as far as our evaluation and gratitude and finally the usefulness of Tschirch's "guide to the sources" is concerned. The statement of Roddis that to his knowledge "no author has . . . undertaken a history of the subject" has to be augmented (or restricted) by adding "except Tschirch whose admirable work represents a history of pharmacognosy and of drugs in one."

Not being a pharmacognosist nor having specialized in the history of pharmacognosy, the author of these lines does not feel competent to speak with authority about the problems in-

volved in the writing of a history of pharmacognosy—long or short—for the Anglo-Saxon world with special regard to the Americas. It seems to him, however, that whoever is going to do the job will have to lean heavily on Tschirch, and that a large part of the work of the presumptive author will consist of checking and extracting the wealth of material offered by the great deceased, of rearranging it and of translating this remodelled extract into English. Sure, there will be additions and revaluations especially as to the work done by Americans on American drugs. In general, however, the material is not only there but already prepared and nobody can afford not to use it as, to quote Tschirch once again, "the bricks" for whatever kind of history of pharmacognosy he wants to write.

An English language history of pharmacognosy is all the more a necessity because in the English speaking world there is an astounding lack of knowledge about the real meaning of pharmacognosy and its difference from, as well as its relation to pharmacology even among those who ought to know; physicians, naturalists of all kinds and the people in governmental agencies. It was quite recently that the author of these lines in discussing the statement of a medical author that "pharmacology is an old synonym for pharmacy" gave a short historical survey on the use and meaning of the terms pharmacology and pharmacognosy and the part of pharmacy and medicine respectively in the development concerned. (*The Scientific Monthly*, LX, 1945:161).

Fortunately, there are in this country pharmacognosists with proven historical knowledge as well as interest. The compilation of an adequate history of pharmacognosy with special regard to the American situation is their responsibility. With the need ascertained and the incentive given, it would be peculiar, indeed, if not very soon the one or the other of our pharmacognosists (or some of them in a joint endeavor) would accept the challenge.

It is understood that the prospective author (or authors) would be entitled to any assistance in securing references, sources, illustrations, etc., the American Institute of the History of Pharmacy should be able to render.

Pharmacy and Aviation*

GEORGE URDANG

American Institute of the History of Pharmacy

In *Ciba Symposia*, Vol. 5, Nr. 9 (December 1943), Victor Robinson, Professor of the History of Medicine, Temple University School of Medicine, has published a series of articles concerning "Aviation Medicine" which proves his profound scholarship as well as his literary mastership.

In the introductory article devoted to the "Discovery of the Balloon" Robinson pays full credit to the courage as well as to the experimental skill of the first aeronaut, the "surgeon, apothecary, and superintendent of the Royal museum of natural history" at Paris, Pilâtre de Rozier (1756-85). "His name," says Robinson, "which one usually seeks in vain in the historical records of medicine or in the chronicles of pharmacy, is inscribed forever with imperishable letters in the annals of aeronautics."

Since Pilâtre de Rozier's scientific activities were primarily based on and devoted to pharmacy, chemistry, and physics and not medicine, there has not been much reason for his being mentioned "in the historical records of medicine." Pharmacy, however, has not forgotten him. He has been mentioned in L. André-Pontier's *Histoire de la Pharmacie* (Paris 1900) and in M. Bouvet's *Histoire de la Pharmacie en France* (Paris 1937). In the Kremers-Urdang *History of Pharmacy* (Philadelphia 1940) the following is said:

An apothecary, the Frenchman Pilâtre de Rozier, was the first human being who dared a balloon ascension (1783). Furthermore, he invented a new type of balloon, the so-called "rozière" . . . De Rozier was killed on June 1, 1785, in a flight over the English channel. Thus the first flyer as well as the first victim of aeronautics was an apothecary.

In his report about the earliest attempts to utilize aeronautics for scientific investigations Robinson mentions that in Russia "the academician Lowitz was selected to undertake the experiments in the air" and was forced to retire because of illness. This frustrated scientific explorer of aeronautics

*Originally printed in Bulletin of the History of Medicine, Vol. XV, No. 3, March, 1944. Permission to reprint here was granted upon the request of the Editor.

who died shortly afterwards was nobody else but the great apothecary-chemist Tobias Lowitz (1757-1804), manager of the Russian court pharmacy and professor of chemistry at St. Petersburg, the man to whom mankind is indebted for the discovery of the deodorizing and decoloring property of charcoal (1785).

Robinson reports furthermore the ascensions of the scientists Sacharof at St. Petersburg and J. B. Biot and J. L. Gay-Lussac at Paris, all of them undertaken during the year 1804. There was, however, in the same year another similar attempt made at Berlin by a young pharmacist who later rose to high scientific fame: Martin Heinrich Klaproth. This fact is reported in the Kremers-Urdang *History of Pharmacy* as follows:

On October 16, 1784, i. e., only one year after Pilâtre de Rozier's first flight, the apothecary M. H. Klaproth, then a young man, ventured a flight in a montgolfière balloon, armed with instruments for the determination of air pressure etc. The balloon was torn and rose only to a height of ten meters and thus the flight was without scientific results.

Robinson gives a touching description of the tragic ascension undertaken at Paris on April 15, 1875, by Th. Sivel, J. Crocé-Spinelli, and G. Tissandier during which the two former died of anoxemia because they did not use sufficient oxygen in the high altitudes which they reached. "The oxygen apparatus," he says, "was arranged by the competent pharmacist, Limousin, according to the proportions indicated by Paul Bert." It seems appropriate to state that this "competent pharmacist," Stanislas Limousin (1831-1887), was the inventor of the apparatus for the inhalation of oxygen which he developed from 1866 until his death. "It is without any doubt the initiative of Limousin to which we are indebted for the development of this [oxygen] therapy," exclaims the author of an appeal for a Limousin medallion to be attached to the house at the little town of Ardentes where the meritorious apothecary was born (supplement to *La Pharmacie Française*, March and April 1939. Paris). It was, by the way, the same Limousin whose invention of the "*ampoules hypodermiques*" opened the way for the enormous development of the parenteral application of drugs (St. Limousin: *Ampoules hypodermiques; nouveau mode de préparation des solutions pour injections hypodermique*. *Archiv. Pharm.* 1 (1886):145).

Robinson mentions the escape from Paris in a balloon of Leon Gambetta, the soul of French resistance against the Germans in the Franco-Prussian war of 1870-71 after the capture of Napoleon III at Sedan. This early use of aerial transportation in wartime has a less famous contemporary counterpart with a pharmacist as its initiator. It was the military pharmacist Jeannel who during the siege of Metz in 1870 established a regular balloon mail service carrying the news from the besieged city to the government at Tours.

, Finally a little booklet may be mentioned published in 1850 by the German apothecary H. Zeise of Altona under the title *Die Aeronautik früher und jetzt, nebst theoretischen und praktischen Vorschlägen zu einer vervollkomneteren Luftschiffahrtskunst . . .* (aeronautics in earlier times and at present, with theoretical and practical suggestions as to improvements in the art of air navigation . . .). It is of interest that the author of this booklet thought "an air journey from Europe to America quite feasible" and that he even dreamed of an "air transport company which, as far as the transport of passengers from Europe to America is concerned, may well hope for advantageous competition with the steamboat companies."

It is not the intention of these lines to claim for pharmacy an important part in the development of aeronautics. It could, however, be shown that in those early periods in which the scientific world on the whole tried to further this new human adventure as well as to draw from it results of general scientific interest, representatives of pharmacy had their full share in the endeavor. It even seems that they were often turned to because their acquaintance with a variety of sciences was thought to make them especially fit for the tasks concerned.

"Bill Proctor's Choice" is the title of a film dramatizing pharmacy as a career, and produced by the Becton Dickinson Foundation for the American Foundation for Pharmaceutical Education. The film was made in Hollywood with a professional cast to emphasize the services of the community druggist, the wholesale distributor and the drug manufacturer. Plans are now under way for local showings of the film throughout the country.

Experiences in Teaching Qualitative Analysis by the Semi-Micro Method

LOUIS A. REBER

The Philadelphia College of Pharmacy and Science

The use of micro methods for undergraduate instruction in qualitative analysis was first described by Engelder and Schiller in 1932. Since that time courses in semi-micro qualitative analysis have been instituted to replace the conventional macro courses in many colleges and universities, and numerous texts using the new technic have appeared.

The semi-micro method differs from the usual macro technic in two important respects. (1) The quantity of sample is about one-tenth that used in the older procedure, with a corresponding reduction in amount of reagents and size of apparatus. (2) The separation of precipitates from liquids is no longer accomplished by filtration through paper. Various devices have been suggested for this purpose, of which the electrically-driven centrifuge is undoubtedly the best. There is a prevalent misconception that semi-micro schemes of analysis differ radically from the conventional schemes, especially in the replacement of the usual reagents by organic reagents. There are some authors who advocate such changes, but the majority have used organic reagents only to supplement the usual inorganic tests. It is, therefore, to be emphasized that semi-micro schemes utilize the conventional methods of separation and testing, and fully as much practice and training in the reactions of inorganic chemistry are gained by the students using these schemes. At the same time the student becomes familiar with the newer organic reagents which are being used in industrial laboratories for both qualitative and quantitative work.

Many institutions have been deterred from introducing semi-micro courses by the initial expense involved. Although this is appreciable, it is much less than might be estimated from the apparatus lists found in the several text-books and in commercial catalogues. The list of equipment to be furnished each student can be cut down considerably, and many expensive items can be improvised at a fraction of their cat-

alogue price. The most expensive pieces of equipment are the centrifuges, but it would be unwise to sacrifice quality to price in this instance. If feasible, the number of centrifuges needed may be reduced by running the course in several small sections, thus getting the maximum use out of the equipment. In the course at the Philadelphia College of Pharmacy and Science, each section has about twenty students. All equipment, including centrifuges, was obtained at a cost of less than four hundred dollars. This did not include the apparatus of conventional size and design supplied from stock. Four centrifuges serve a group of twenty students; this is perhaps the maximum number which can be handled without confusion.

To be balanced against the cost required to start a semi-micro course is the reduced expense of maintaining it. A generous estimate of the cost of chemicals is about one-third of that formerly required in the macro course. In addition, the work of preparing reagents and solutions is greatly reduced. It is probable that these savings are sufficient, over a period of about five years, to pay for the additional equipment. Where the storage of equipment is a problem, the reduced space required for the smaller apparatus is an added advantage.

Let us now see what advantages semi-micro qualitative analysis offers to the instructor and to the student. The author has had an opportunity to compare the courses during the past four years; the comparison was the more striking in that groups using the two different technics worked simultaneously in a single large laboratory. One of the greatest advantages of working with smaller amounts of material and one which will be especially appreciated by teachers of qualitative analysis, is the marked reduction of fumes and odors in the laboratory. It was very striking, with the two groups working at the same time, to see the dense clouds of ammonium chloride or acid fumes in one section of the laboratory, while the atmosphere on the semi-micro side was practically clear. It is possible also to do away with special facilities for the use of hydrogen sulfide, since it is used in smaller amounts and for shorter periods of time.

The work of preparing and dispensing "unknowns" to the student is much reduced. Fifteen or thirty cc. stock bottles

of each ion are usually sufficient, since only drop quantities are used. A large variety of samples may be prepared quickly, and the concentration of each ion may be varied if the instructor so wishes. One to two cubic centimeter liquid samples, or one-tenth to two-tenths of a gram of solids are dispensed. If analyzed samples are purchased, this item of cost can be considerably reduced.

The general appearance of the laboratory is improved when the newer technic is used. Each student has before him a complete set of reagents making it unnecessary for him to leave his desk except on rare occasions. This eliminates traffic in the laboratory, crowding at the reagent shelves, and prevents accidents. The reagent sets present a pleasing appearance and the student takes pride in keeping them clean and properly arranged. Since most reagents are used in drop quantities, few need be refilled more than three or four times a year; this may be done by the student himself from stock bottles.

It is the claim of most texts on semi-micro qualitative analysis that this method is more rapid than the macro. There is undoubtedly time saved in many individual operations, notably in precipitations with hydrogen sulfide, in filtrations, and in washing and dissolving precipitates. It has been our experience, however, that the increased number of confirmatory tests consumes the time saved in the routine operations. Thus, although the students are usually unable to accomplish any more in a given time, they certainly use their time more profitably. So far as accuracy attainable by the two methods is concerned, there is little to choose between them. A careful examination of the results of the students in the two courses shows no appreciable advantage for either.

From the standpoint of the student, he gains in several ways by the newer course. Most students are gratified at the opportunity to do something new and up-to-date. One of our problems has been to convince those that are taking the conventional course that they are not being deprived of something. The student in the semi-micro course learns to work with small quantities, and is impressed with how much can be done with so little material. He must of necessity learn to be careful. When the total amount of a solution is perhaps twenty (20) drops, the student readily understands that the

loss of five (5) or ten (10) drops is just short of catastrophe. This training stands him in good stead in all branches of his work, especially in quantitative analysis. By having an individual set of reagents, each student accepts the responsibility for their care, and the problem of contamination becomes an individual one. Everyone learns very quickly the importance of keeping his reagents free of contamination.

Certain practical suggestions in the management of such a course may be offered. The first of these concerns the reagent racks and bottles. The racks are best built in the college shop to meet individual requirements. Those at the Philadelphia College of Pharmacy and Science are double, being suspended over the shelf which formerly held reagents, and serve two students, one on each side of the laboratory table. They are painted with a black, acid resistant finish and give the appearance of being a permanent part of the laboratory equipment. Space is provided for four tiers of bottles in each set. The front row accommodates one-ounce bottles used for those reagents needed most frequently, while the others are in half-ounce bottles arranged alphabetically in three rows, each raised above the other to permit a view of all the labels. Liquids are in dropper bottles, with the exception of the strong acids which are kept in glass-stoppered bottles. All bottles are square and fit snugly on the shelf, so that the stoppers may be removed with one hand. Only the bottles containing solid reagents are to be removed for use, the others remaining permanently in the racks.

Identification tests for the various ions are usually carried out on spot plates or on spot test paper. In the course given by the author, spot test paper has been largely replaced by tests on the spot plate, since it was felt there was a certain advantage in actually seeing a precipitate form in a liquid. For white or light-colored precipitates a black spot plate has been recommended, but this may be replaced satisfactorily by a watch glass with the under-side painted black, or merely placed on a black surface. If spot plates of clear glass are available they may serve a double purpose.

An item which frequently is recommended as part of the equipment is some specially designed water-bath. These are offered by supply houses at fancy prices, but are entirely unnecessary, a small beaker serving the purpose quite well. It

is suggested that the student be supplied with plenty of drop-per pipets with capillary tips. These are inexpensive and facilitate the work greatly. Semi-micro burners are convenient to have but not absolutely essential, an ordinary Bunsen serving the same purpose.

It is our hope that what has been set forth in this paper will prove of value to those contemplating a change to semi-micro qualitative analysis. The author is firmly convinced of the merits of the newer technic, and is looking forward to teaching all students in his classes at the Philadelphia College of Pharmacy and Science by this method.

A Tribute to Jose Hipolito Unanue

GEORGIANNA SIMMONS GITTINGER*

University of Maryland, School of Pharmacy

"The greatest gifts of divine generosity," says Gracian, "are a fertile mind, a deep understanding and a cultivated taste." Looking back through the long perspective of the years, the late XVIII century glows with a magic light. In that hyaline clarity of the classic arcades we see Unanue communing with Franklin and Jefferson, with Bentham and Hume, Montesquieu and Voltaire and all the other encyclopedic minds of the age, one with them in quality and ability.

Charles III, best and most enlightened of the Spanish Bourbons, ruled in Spain when Unanue was young, and some of the pale golden age of his court reflected itself in Peru where Cosme Bueno and Gabriel Moreno tutored the youth who was predestined to tower above them.

José Hipólito Unanue has been called the father of his country and creator of the Peruvian spirit. He has with equal truth been called the father of South American medicine. In protest to the ancient methods of teaching anatomy—a mass

*Miss Gittinger is an instructor in Pharmacology in the School of Pharmacy of the University of Maryland. She reads the Latin languages fluently and is a student of Latin American countries. We appreciate her sketches which give us pictures of South American celebrities, past and present, whom we would know more intimately.

of superstition—he founded the modern anatomical amphitheater to teach from the human body. He also evolved the plan of a medical school as distinct from the chair of medicine in the university.

Unanue had the true scientific fervor that was intolerant of charlatans and quacks. His condemnation of them extended to barber surgeons and the deplorable type of women who practised as midwives. Yet he had genuine esteem for the native healers who through trial and error over the centuries, had discovered useful medicines.

All the terrible diseases of his time came to Unanue's study. Syphilis and small-pox and measles, verruga and malaria and tabardillo were likely to rage in epidemic fury. Only two, malaria and small-pox, were susceptible of control in his day, but his studies provided the background for later public health measures.

Medicine, however, was only one facet of his polyform activities. Unanue was a statesman, scientist, educator and journalist. Classic scholar, cosmographer, archeologist, sociologist, his fine library was the meeting place of all other scientific minds. His stupendous work "*Clima de Lima*" is still unexcelled, and a periodical *Mercurio Peruano* was the object of his journalistic enterprise.

A notable orator, Unanue also wrote with a stately eloquence. Of his non-medical themes coca, quina, tobacco, agriculture and irrigation, and minerals in Peru are significantly progressive.

Keenly alert to political symptoms in America, his inherent patriotism drew him from his home and family to go as a physician with San Martín when the Argentino crossed the Andes on his march of liberation.

Bolívar and San Martín, and later O'Higgins, are the soldier patriots better known to North America; but without Unanue's prestige, his influence in Lima and his leadership, the military successes of the generals would have been long delayed. Unanue was the link between north and south throughout the struggle, because he thought in terms of America. When the old viceroyalties and kingdoms were broken up in the fight for independence, it was he who saw the im-

portance of a unified continent in place of small rival states, and influenced the Council of the Generals thereto.

The new political organization of Peru was the work of Unanue, who was named Chief of his State by unanimous vote. Then when his country was well launched as a nation, he retired once more to his estate near Lima to enjoy his library and direct his farms.

In himself this greatest of Peruvians personified the balance necessary for civil progress: a background of classical study and the humanities, emphasis on maintenance of health, and a serene confidence in the destiny of his native land.

A Course in Dispensing Pharmacy

EARL P. CUTH

College of Pharmacy, Ohio State University

Some significant trends in the practice of medicine and pharmacy have been in evidence during the past decade and have become clear enough at the present time to demand careful study on the part of the teachers of pharmacy. A careful study of these trends followed by the reorganization of courses in pharmacy schools is the duty of every teacher if the young man and woman is to be fitted adequately and properly for the profession.

Some of these trends, as revealed by a number of surveys, are listed. The number of general drug stores is decreasing and this will most likely continue for some time because of the low enrollments in the colleges of pharmacy. The number of professional stores has increased. This has been the result of several factors, the principal one being the result of better education of pharmacists. Professional stores will probably continue to increase in number. The hospital pharmacies have increased in number and in the total amount of business done. This trend will continue with the increase in the number and size of hospitals. Two major forces—the war and hospital insurance plans—will cause an increased demand for more and larger hospitals. The growth of clinics, private

and industrial; local, state and perhaps federal health plans has been greatly stimulated. These trends are economic and have been brought about by a number of conditions.

In the field of therapy notable advances have been made. New and powerful drugs have been produced, new knowledge concerning the actions of drugs on the living organism has been gained, new technics in drug preparation and administration are recommended. As a result of all of these trends the health customs of the laity, the mode of practices of the medics, and the pharmacist have been affected.

The laity has a greater appreciation of the need for preventative medicine as well as for accurate diagnosis and fine surgery. They have been educated to make use of technical skills and knowledges instead of relying on "patent" medi-

cines. They see advantages, financial and healthful, in participating in health insurance plans and clinics. They are going to the specialist more and more. They are more critical and selective in their choice of the pharmacist who is to supply the medicament. The physician is finding out that he must specialize and that this specialization requires continuous and intense study in the field of diagnosis and surgery. He has less time for a study of drugs, drug actions and drug forms. He is more and more depending upon the pharmacist for drug information.

The pharmacists are being called upon for more technical knowledges and skills as a consequence. In the hospital he does much manufacturing and developing of special formulæ. He is consulted by the drug committee of the hospital in the matter of choice of product. He is expected to keep the physicians informed on improved products and better modes of preparation. The pharmacist in the professional store is functioning in a similar manner.

Now in order for the pharmacist to function as a co-worker—not as a "hand maiden" to the physician—his training must be modernized. He must learn to read and analyze, very critically, all material published and disseminated in the literature and by drug manufacturing companies. He must be capable of furnishing medicaments adjusted for tonicity and hydrogen ion concentration when called upon to do so. He

must be familiar with the new solvents and bases—their purposes, toxicity, *etc.* He is expected to furnish the proper sundries such as syringes, needles, atomizers, *etc.* In general his chief attribute is an extensive and accurate knowledge of drugs, technics and appliances.

The equipping of a student for these more technical and professional activities is the duty of the colleges of pharmacy and particularly the function of the teachers in the pharmacy area. Basic sciences must be given as a background for such subjects as *materia medica*, pharmacognosy, glandular products, biological products and toxicology. The dispensing courses are dependent on courses dealing with the tools, terminology and technics of pharmacy but their primary purpose should be to cement and crystallize all of the students training; to teach him how to make practical use of his training; to give him confidence; to develop his professional personality and pride; to establish in his mind the idea that he is trained to do a very necessary and highly specialized kind of work.

A course in dispensing pharmacy given at a time when the student has the necessary background can be organized to do much in accomplishing these goals. Such a course will have to deviate from the usual teaching procedures. Much thought and organization is required; some adjustment in laboratory facilities are usually needed.

A brief but general outline of such a course in dispensing is outlined. The subject of incompatibility should be discussed. This requires at least 24 hours of didactic instruction and 60-72 hours in laboratory. This amount of time permits only of generalization. An equal amount of time should be devoted to the study of hydrogen ion concentration in relation to treatment of diseases and its pharmaceutical considerations; osmotic pressure and its applications; new ointment bases and new solvents. The remaining time of 11 to 12 weeks should be spent in "rounding out" all of this material so that it means something to the student. This may be accomplished by several methods. We have tried to do this by using the lecture hour for discussion and comparison of popular proprietaries. The students prepare "thumb nail" details of two or more proprietaries and present this material to the class. The members of the class are encouraged to ask questions and participate in the general discussion that follows. We have

found these sessions exceedingly popular and stimulating. The student learns to read with an objective mind; he develops confidence in his ability to speak and think; he improves his speech and his personality. The laboratory period is devoted to the filling of prescriptions. A selected group of prescriptions have been collected, most of them in common usage today. Enough of these are on file so that no more than 2 students get the same prescription during one laboratory period. This prevents some students from leaning too much on their classmates. Each prescription carries the diagnosis of the patient's condition. The student in filling this prescription must find out just how or what action a particular drug has when used for a particular condition. He must be alert to overdoses, incompatibilities and the legal status of the prescription. He is expected to confer with the instructor when these situations arise in the same way he would confer with the physician in practice. If an adjustment in pH or the osmotic pressure of a prescription is in order he is, after consultation with the instructor, permitted to do so. If an appliance such as an atomizer is indicated, he selects the proper one from a display and "sells" it to the customer. The prescription is properly priced, numbered and filed. Prescription refills are assigned. If the two products do not compare favorably, the students involved must get together and find out why. This type of laboratory course is not conducive to a large number of exercises but it does give the student a more thorough training on the prescription that he does fill. This course in dispensing is modified from usual courses in one other respect. At frequent intervals the student is directed to deliver his prescription to another faculty member. He may take a prescription containing crude drug ingredients or products to the instructor in pharmacognosy, or one containing an unusual mixture of drugs to the instructor in materia medica. This accomplishes two things. First, it causes the student to meet various personalities and conditions and secondly, it permits the other instructors on the staff to keep in close touch with the pharmacy program. This is essential because all courses in the pharmacy curriculum must be pointed to the task of making a pharmacist.

The observations gained by two years of this type of a course in dispensing pharmacy have been gratifying. The

students show intense interest and become highly critical of their own work. They develop confidence, poise, and pride. They become professional. The mechanics of operating such a course are not as difficult as you would first imagine. A separate set of standard drugs, drug preparations and chemicals should be developed as a nucleus for each work counter. The majority of the prescriptions should be filled from this set. A careful selection of prescriptions will reduce the number of special items that need to be placed on the side shelf. A few well selected reference books are necessary. In sections of 15 or 20 students a laboratory assistant is a big help in seeing that the students are supplied with exercises and materials. The instructor can then spend his entire time working with the student. This kind of a laboratory should never be turned over to a graduate assistant as is the practice in some schools. The task of instructing should be done by the professor in charge.

From our experience with this type of a course we have found that great strides in teaching can be made. We find that our students are enthusiastic and that the individual faculty members are more keenly aware of the part they play in educating young men and women for the profession of pharmacy.

In connection with the recent announcement that the Army is no longer recruiting physicians, the following figures are of interest:

The Army Medical Department has grown from 8,010 at the beginning of World War I until it now numbers 680,891. Of this number approximately 44,651 are in the Medical Corps, 14,948 in the Dental Corps, 2,012 in the Veterinary Corps, 2,364 in the Sanitary Corps, 15,078 in the Medical Administrative Corps, 59 in the Pharmacy Corps, 40,305 in the Army Nurse Corps, and there are 559,327 enlisted men, 813 Physical Therapy Aides, and 1,334 Hospital Dietitians.

A statement by the Executive Committee of the Association of Land Grant Colleges and Universities in session, Washington, D. C., January 13, 1945:

"The Land Grant Colleges and Universities have had long and successful experience with military training in peace and war. We believe in the maintenance of a continuous policy of military training. Since the extent and character of such a program for the post-war period cannot wisely be determined at the present time, we recommend decision on this important policy be postponed until the expiration of the present Selective Service Act.

C. A. DYKSTRA,
Chairman, Executive Committee."

Record Keeping in the Dispensing Laboratory

ELMER M. PLEIN and L. WAIT RISING

University of Washington, College of Pharmacy

Instructors are frequently hard put to devise practical systems of keeping teaching records for their laboratory courses. Teachers of dispensing pharmacy are no exception. Rather their problem is complicated because the classes will do so many more exercises than they will, for example, in a chemistry laboratory with the same number of credit hours.

In order to develop a running breakdown of the laboratory assignments which will show at a glance the variety of work already given, the probable trend of future assignments, mark the progress of the class, indicate the number and type of containers used; in short give the instructor or anyone, for that matter, an immediate, easily comprehended, yet accurate picture, a bit of figuring must be done.

The University of Washington College of Pharmacy has developed a work sheet for this "all purpose" need which might be of interest to others in the field. We now describe it in the hope that it or some improved variation will prove useful to other institutions.

The work sheet can best be described by a working drawing detailing its operation accompanied with brief explanations. At the beginning of the year the instructor sets up his sheet by ruling off 24 vertical columns on a paper 24 inches wide and as long as can be conveniently handled. The majority of these columns will be in the neighborhood of $\frac{3}{4}$ inch wide. Appropriate headings for each column are then inserted. The first nine columns of the chart with proper entries are shown by way of example in Figure I. The remaining 15 columns are used for other classes of preparations the students make.

It is apparent from the headings that the instructor can now keep a running inventory of his laboratory work. From this record he can at a glance obtain the following information:

FIGURE 1.
LABORATORY WORK SHEET

Week	R. No.	Type of R.	Unusual Principles	Papers	Capsules	Emulsions	Collyria	Lotions
Sept. 26-30	1001	20 Papers	None	#40 Paper 4 obl. box				
	1002	24 Capsules	Eutectic		#3 caps #1 vial	4 3/4 bottle		
	1003	100 cc. Emulsion	None				1 3/4 drop. service	6 3/4 bot.
	1004	1 3/4 Collyrium	Isotonic					
Oct. 2-7	1005	6 3/4 Lotion	None					
	1006N*	36 Capsules	None		#1 caps #3 vial			
	1007 10081*	4 3/4 Emulsion 12 Papers	Volatile Oil Hygroscopic	#16 Paper 2 obl. box		4 3/4 bottle		
Oct. 9-14	1009	8 3/4 Lotion	None					
	1010	1/2 3/4 Collyrium	None				1/2 3/4 drop. service	8 3/4 bot.
Oct. 9-14	1011	2 3/4 Ointment	Water-sol- uble base					

*N represents narcotic prescription and I represents an incompatibility.

1. The number of prescriptions assigned.
2. The date they were assigned.
3. The type of prescription.
4. The unusual principles involved.
5. The distribution break-down which facilitates determining the number of each class of preparation assigned as a regulation of those to be assigned in the future.
6. The number of capsules, papers, boxes, vials, and other containers required.
7. The sizes of each item in No. 6.
8. The size of each prescription.
9. The equipment required even though it is not actually tabulated.

In addition special symbols are used when filling in the column for prescription number to designate:

10. The narcotic prescriptions (N).
11. The exempt narcotic prescriptions (EN).
12. The other special regulation prescriptions made so because of certain state laws, e. g., barbituric acid derivatives (B).
13. The incompatible prescriptions (I).
14. The specialty prescriptions (S), e. g., Sulmefrin, Tuamine Sulfate etc., which the students study in the Model Pharmacy.

Comparing the work of past years is also made easy by such a diagrammatic presentation. Planning of the next year's work is facilitated too.

Thumbnail History of Pharmacy in the U. S. Army

RALPH BIENFANG

University of Oklahoma, School of Pharmacy

As is indicated by the title, no attempt is here being made to set down the whole glorious history of pharmacy in the United States Army. For that awaits another day, and thorough research.* Rather, it has been thought desirable to record in a short space, certain pertinent historical events which are at present not generally known. The record of these events then will provide a sound though brief basis for future thought and action with respect to pharmacy in the U. S. Army.

*Now being conducted under the auspices of the American Institute of the History of Pharmacy.

As might have been suspected, medical supplies at the time of the beginning of the Revolutionary War, were brought by the individual physicians who rallied to the defense of their country. Very shortly, of course, these supplies were exhausted, and then and there arose the problem of resupply. That this matter of resupply was handled unsatisfactorily is indicated by the fact that: "A committee was appointed by Congress on the fourteenth of September, 1775, 'to devise ways and means for supplying the Continental army with medicines.' This committee, however, could suggest nothing better than the old system, and only modified it to the extent of requiring all accounts to be audited by the President, before being paid by the Treasurer. The defects in administration, however, became so great, and so many complaints were made that the army was inadequately supplied, that on the twentieth of August, 1776, Congress resolved: 'That a druggist be appointed in Philadelphia, whose business it shall be to receive and deliver all medicines, instruments and shop furniture for the benefit of the United States.'"

To this position Dr. William Smith was elected, with a salary of thirty dollars a month. Thus Dr. Smith, apothecary, became *de facto*, Chief Medical Purveyor of the United States Army. In the improvement of the organization of the Army which followed, Andrew Craigie of New York was appointed Apothecary General, and J. B. Cutting, New York, and Henry C. Flagg of South Carolina were appointed Apothecaries. These three men served to the close of the Revolution and were honorably discharged in 1783.

In the period from 1789 to 1818, though not all during that time, Francis LeBarron served as Apothecary General, and David Neilson, James Cutbush, Christopher Backus, Richard Brownell, Joseph West, David Low and Cornelius Cunningham were Assistant Apothecary Generals. In the period from 1818 to 1821 Francis LeBarron was still Apothecary General and Christopher Backus, James Cutbush, C. G. Foster, and Robert P. McCalla served as Assistant Apothecaries.

That Apothecary General Francis LeBarron cut quite a figure can be judged from a description of his uniform. It was black, the coat had a standing collar, and on each side of the collar, a star of embroidery within half an inch of the

front edge. His coat was furthermore single-breasted, with ten buttons, and had button holes worked in blue twist in front, five inches long at the top and three at the bottom. The standing collar rose to the tip of his ear. His cuffs were between three and a half and four inches wide. The skirt of his coat reached to the bend of his knee. On his collar was one blind hole five inches long with a button on each side. He wore breeches or pantaloons with four buttons on the knee and gilt knee buckles. He was equipped with high military boots and gilt spurs. His stock was variously of black silk or black leather. His chapeaux had a black loop and button, and a black cockade four and a half inches in diameter with a gold eagle in the center. His sword was straight, and yellow mounted, with a black or a yellow gripe. His waist belt was of black leather, and his epaulettes were of gold. He was not allowed to wear a sash.

Though on Tuesday, January 23, 1821, the House of Representatives by a vote of 109 to 48 passed a bill for the reduction of the Army whose section 4 provided "one apothecary general with a salary of fifteen hundred dollars per annum," by the time this bill went through the Military Affairs Committee and the Senate and finally became law on March 2, 1821, any mention whatsoever of Apothecary General had been stricken from it.

The reason for abolishing this office in the Army may lay in the impoverished condition of the Federal Treasury at the time.

In spite of the fact that the position of Apothecary General had thus been summarily done away with, the need for pharmaceutical services was still attendant upon the U. S. Army. Consequently in the 1825 Medical Regulations, the duties of the former Apothecary General and his assistants were given to the officers of the Purveying Department. Surgeon T. G. Mower took up these duties, for which purpose he was stationed in New York at least from 1821 to 1831.

On May 19, 1862, Congress passed without debate a ruling, "That the Secretary of War be authorized to add to the Medical Department of the army, medical storekeepers, not exceeding six in number, who shall have the pay and emoluments of military storekeepers in the quartermaster's department, and who shall be skilled apothecaries or

druggists, who shall give the bond and security required by existing laws for military storekeepers in the quartermaster's department, and who shall be stationed at such points as the necessities of the army may require; Provided, That the provisions of this act shall remain in force only during the continuance of the present Rebellion."

On the approval of this act, the following general order was issued in reference thereto:

"WAR DEPARTMENT,
Adjutant General's Office
Washington, May 24, 1862.

GENERAL ORDERS, NO. 55

* * * * *

II. The following are regulations which will govern the appointment of medical storekeepers, under the first section of the foregoing act of Congress.

1. A board of not less than three medical officers will be assembled by the Secretary of War, to examine such applicants as may, by him, be authorized to appear before it.

2. Candidates to be eligible to examination, shall be not less than twenty-five years, nor more than forty years of age; shall possess sufficient physical ability to perform their duties satisfactorily; and shall present with their applications, satisfactory evidence of good moral character.

3. Candidates will be required to pass a satisfactory examination in the ordinary branches of a good English education, in pharmacy and materia medica; and to give proof that they possess the requisite business qualifications for the position.

4. The board will report to the Secretary of War, the relative merit of the candidates examined, and they will receive appointments accordingly.

5. When appointed each medical storekeeper will be required to give a bond in the amount of forty thousand dollars, before he shall be allowed to enter on the performance of his duties.

BY ORDER OF THE SECRETARY OF WAR:

L. THOMAS
Adjutant General."

In keeping with this act the following were commissioned, as Medical Storekeepers, on August 13, 1862: Hennel Stevens, H. N. Rittenhouse, Victor Zoeller, Henry Johnson, Robert T. Creamer and George Wright. Other medical storekeepers appointed between June 20, 1863, and August 3, 1867, were William M. Giles, George T. Beall, A. V. Cherbonnier, and F. O'Donoghue.

That the Confederate Army recognized the need of pharmacists and had them, is indicated in paragraph 53, General Orders (Union Army), No. 100 April 24, 1863: "The enemy's chaplains, officers of the medical staff, apothecaries, hospital nurses, and servants if they fall into the hands of the American Army, are not to be treated as prisoners of war unless the commander has reason to detain them."

As few years ago as 1929 pharmacy problems were still plaguing the Medical Department as was recounted at that time by Major Edgar C. Jones, M. C., U. S. Army.

"The necessity for giving medical officers detailed to finance and supply work a course of training before assigning them to responsible positions or sending them to the Industrial College has been recognized by the Surgeon General's Office ever since the World War." " - - officers who had had no opportunity and probably no desire to know anything about supply work have had to be assigned to responsible positions in the Surgeon General's Office and in depots with little possibility of ever giving these men the training required to make them fully qualified supply officers. Is it any wonder the old boat has sprung a leak occasionally? The wonder is that she has not swamped.

"Another feature of supply work that has been neglected and which works a hardship, not only upon personnel but on the hospitals, is the lack of opportunity for the personnel selecting and procuring supplies to use or see the supplies in practical use in the hospitals. The result is that in some instances supplies have been procured that appear ideal for the purpose intended but when placed in practical use medical officers find that the items are deficient in some way and will not use them; yet these officers take no steps towards correcting the deficiency, with the result that the supply division continues to approve requisitions and procure the same items under the belief these items are what is desired, while such supplies continue to pile up in the store rooms and are not used. An example of what is meant occurred recently. An officer at one of the smaller stations wrote the Surgeon General's office stating that a certain item furnished that hospital was not suitable for the purpose intended. The records showed this particular type of the item had been procured in fairly large quantities on several occasions and was being issued regularly to all stations. It was thought peculiar this item was not suitable for use at this one small station when practically all stations were requisitioning for it regularly and there had been no other complaints received. Inquiry as to its efficiency was made of the officer using the item at one of the larger hospitals, and he said he had found it was no good over a year before and had used none of it since. Yet requisitions from this hospital showed that it had been requested regularly and there was sufficient quantity in the store room to supply a good part of the Army.

"The supply division is handicapped in not having an officer who has been thoroughly trained in all phases of supply work, on duty in some

of the larger hospitals. The instance cited above would not have occurred if such an officer had been on duty at this hospital; the officer using the item would have been furnished material he could use and the government would have saved money through discontinuing the purchase of material that was not used. Also, if this were done, new and up-to-date equipment could be sent to such hospitals for practical test, after which detailed reports from the standpoint of practicability of the item and difficulties in procurement thereof could be submitted to the Surgeon General's office for use in making future purchases. The officers engaged in professional work are too busy to make the reports required on new items and furthermore do not understand the limitations placed on certain procurements by the Comptroller General, the difficulties in making purchases, or the necessity for drawing up proper specifications.

"Such conditions as all of the above will continue to exist until officers engaged in supply work are properly trained and these officers then detailed to the responsible positions in the Surgeon General's office and the depots, and a part of the permanent cadre given a tour of duty at some of our larger hospitals."

Or, perhaps, until such time as these specifically pharmacy duties are made the responsibility of pharmacist officers.

On July 12, 1943, as is currently well-known, Congress passed an act creating within the Medical Department a Pharmacy Corps. It is hoped that this recent legislation will be sufficient to provide the U. S. Army with the adequate pharmaceutical service it so richly deserves.

Bibliography

Annals of Congress, 16th Congress, 2d Session 1820-1821.

The Medical Department of the United States Army from 1775 to 1873, Harvey E. Brown, Washington, D. C., 1873.

Special Training for Medical Supply Officers of the Army by Major Edgar C. Jones, M. C., U. S. Army. The Military Surgeon, vol. 64, No. 5, May, 1929, pp. 734-740.

President Virgil M. Hancher of the State University of Iowa is requesting of the state legislature an appropriation for the construction of a new pharmacy building on the west campus adjacent to the college of medicine and the new university hospital. The college of pharmacy is now housed in the botany-pharmacy-chemistry building on the east campus. The college buys or manufactures all the drugs for the university hospital. There are sound reasons, therefore, for placing the college of pharmacy adjacent to the medical laboratories and hospitals on the west campus. These reasons alone would justify the appropriation, but the removal of the college of pharmacy to the west campus will serve also the urgent purpose of giving the chemistry department long needed space.

Pharmaceutical Education and the Plant Science Seminar

ELMER H. WIRTH

College of Pharmacy, University of Illinois

Pharmaceutical education is making stupendous strides. In less than twenty years the minimum requirement has been raised from two to four years; a five-year course is now a common topic of conversation and will, perhaps sooner than is expected, become a reality. It is natural that progressive schools should still be experimenting with curricula for the period is one of transition and out of it will come a better Pharmacy, fully recognized by its sister professions and possessing the confidence and admiration of the laity. Realizing the truth of the often repeated statement that, 'if Pharmacy is ever to claim its rightful place it must clean its own house,' Pharmaceutical Educators as a whole are making a sincere effort to present an up-to-date educational program of the highest quality.

Pharmacognosy is one of the *basic* pharmaceutical sciences, and at the same time is a specialty with rather broad ramifications. The presentation of pharmacognosy in a program designed for the training of a retail pharmacist needs a certain balance between chemical, botanical and other basic viewpoints. For the training of the specialist, instruction in many additional related subjects is needed. More progressive schools are devising means by which flexibility may be introduced into the curriculum, and thus are beginning to serve Pharmacy in its broader aspects.* Some, not so progressive schools, continue to teach all of their subjects much as they were taught before 1926. When, at that time, an additional year was required, they simply added more of the same; more pharmacy, more chemistry, etc. In the more progressive schools Departments of Pharmacognosy have been expanded to keep pace with the modern requirements in drug plant cultivation, breeding and in plant chemistry. Modern instruction in the commerce, and in the quality and purity of vegetable and animal drugs is presented, as are also the factors in-

* American Jour. of Pharm. Education, VII, (1943), 60-63.

fluencing the quality of drugs and their effect on the final preparation and its ultimate therapeutic use.

In 1923, Dr. E. L. Newcomb, then Professor of Pharmacognosy at the University of Minnesota, organized the Plant Science Seminar. Its purpose was the exchange of ideas and information between pharmacognosists by cooperative laboratory work, informal discussions and field trips. Since its inception, certain schools and colleges have insisted that one or more members of their teaching staffs in pharmacognosy attend these meetings; manufacturers have sent their pharmacognosists and government and Association laboratories have sent representatives. The Plant Science Seminar represents the only organization devoted to Pharmacognosy. Twenty-two annual meetings have been held in various parts of the country, much to the advantage of those attending.

At the twenty-second annual meeting in Cleveland, on September 5 and 6, 1944, a rather interesting discussion was held which it is believed, might be of some interest to pharmaceutical educators. The discussion concerned the nature and quality of instruction in pharmacognosy in various schools and colleges of pharmacy. It was pointed out by one member that in some schools instruction in pharmacognosy was quite inadequate and was confined largely to the type of information presented some thirty to fifty years ago under the title of "Materia Medica." This type of information, he said, was still presented year after year, without change. Another member stated that in his opinion, the subject at many schools was taught by staff members having no special training or experience in pharmacognosy, and that often the subject was assigned to the latest acquisition to the staff, because no one else wanted to teach it. The real trouble in such a school was, he felt, administrative. Certain subjects had to be taught, and therefore a teacher had to be appointed, but no further attention to the matter was given.

Still another of the members remarked that the Plant Science Seminar was an organization existing expressly for the exchange of ideas and information, and for the discussion of progress in Pharmacognosy. He asked, how many of the Association schools annually had representation at the Plant Science Seminar. The secretary was momentarily unable to answer this question but promised to prepare a survey. Such

TABLE 1

Number

Seminars

School.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 Attended

School.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Attended
1. University of Colorado																			2				1
2. Univ. of Connecticut									3						3	3	3		7			1	6
3. University of Florida						1	1	1	1	1	1	1		1	1	1							10
4. University of Illinois	1	1	1	1	5	7	5	1	2	2	5	1	4	7	3	9	5	8	11	1	5	5	22
5. Indianapolis C. of Phar.						1								2	2	2	2		2		1	1	8
6. Purdue University										1							4	1			1		4
7. State U. of Iowa													1									1	1
8. University of Kansas					1	2			1							1	2		1	1			7
9. Louisville C. of Pharm.																		2					1
10. Loyola University																					1		1
11. University of Maryland	1		2	1	2	1	1	2			2	1					3	3	3		2		13
12. Massachusetts C. of P.	1	1	1	1	1	3	1	1	1	1	1				1	3	3	3	3	2	1	1	19
13. University of Michigan					1				1										2				3
14. Wayne University																			1				1
15. University of Minnesota	2		2	2	2	1	1	2	1	1			1			13	1	2	1				14
16. Univ. of Mississippi						1											3		1	1			4
17. University of Montana			1			1	1			1			1							1			6
18. University of Nebraska											3							2			2		3
19. St. Louis Coll. of Ph.					2																		1
20. Creighton University								1															1
21. Rutgers University	1	1	1	1	1	1	1	1	1	1	1	1											11
22. University of Buffalo								1	1	1		1											4
23. Columbia University					3																		1
24. Fordham University																		1	1				2
25. Long Island University						2											2						2
26. U. of North Carolina								1									4				1		3
27. N. Dak. Agr. College.																	1				1		2
28. Ohio State University											1					1	2	1	2	1	5	3	8
29. University of Toledo																				1			1
30. Western Reserve Univ.					1	1	1		1	2				2	3				2		2	16	10
31. Univ. of Oklahoma						1	1	1	1	1				2	4	2	5	1			1		11
32. Oregon State College													1										1
33. Duquesne University														1									1
34. Philadelphia C. of P.	1		1	1	2	1	1	1		1			2	2	6	2		2	2				14
35. Temple University						1		1		1	2	1	2		1								7
36. Univ. of Pittsburgh	1		1	1		1		2	1	1	2		1	2	2	4	1	3		2	2		16
37. Med. College of S. Car.								1							1	1	1	1					5
38. South Dakota State Col.	1		1				3							3		2							5
39. Univ. of Tennessee									1		1							1	1		1		5
40. University of Texas										1						1	5	1					4
41. Med. Col. of Virginia																	1	2					2
42. Univ. of Washington																3		1		2			3
43. State Co. of Washington	1				1																		2
44. West Virginia Univ.																	2		1		1	2	4
45. Univ. of Wisconsin						2	1	1	1	1	7					2				2			8
Univ. of Alberta									1	1			1	1		1			3		1		7

a survey has now been prepared from the registration records of the Plant Science Seminar and is presented below in two tables. The list of Association schools used for checking was that appearing on the inside covers of the July 1944 number of the *American Journal of Pharmaceutical Education*, representing 61 schools.

Table I includes the actual registration from the Seminar Record. The numbers in the squares are the actual number of individuals registered. The numbers at the head of the columns are the successive meetings of the Seminar for which time and place appear in Table II. The numbers in the right margin are the number of Seminars at which a school had representation. Those schools having no representation at any seminar have been omitted from the table to save space. Likewise, foreign schools, government, association and manufacturer's representatives have also been omitted. In this connection it is interesting to note that government officials either from the Department of Agriculture or from the F. D. A. have attended 10 of the 22 sessions of the Seminar, while from 1 to 5 manufacturer's representatives have attended all 22 of the meetings.

Table II presents a list of the twenty-two meetings of the Plant Science Seminar, their time and place and the number of A. A. C. P. schools represented as well as the number of foreign schools, government, association and manufacturers laboratories represented. The last four have been grouped as one since they are of passing interest only.

Although 45, or about 74 per cent of the schools holding membership in the A. A. C. P. have at one time or another had representation at the Plant Science Seminar, it is interesting to note that the largest number of Association schools represented at any one meeting of the Seminar is 18, or about 30 per cent. At the Columbus and Cleveland Seminars in 1943 and 1944, twelve schools were represented, or about 20 per cent. Shall we therefore conclude from this survey that between 70 and 80 per cent of the Association schools are so little concerned with the quality of instruction in pharmacognosy in their own curricula that they will not provide for representation at the Plant Science Seminar? An affirmative answer to this question is perhaps a matter of conjecture. Still the fact no doubt remains, that schools having a fairly

TABLE II.

No.	Year	Place	A. A. C. P. schools attending	Number of other groups
1	1923	University of Minnesota	7	3
2	1924	Buffalo, N. Y.	5	2
3	1925	University of Minnesota	8	3
4	1926	Ithaca, N. Y.	8	2
5	1927	St. Louis Coll. of Pharm.	11	4
6	1928	Massachusetts C. of P.	13	3
7	1929	Black Hills, So. Dak.	15	4
8	1930	Baltimore, Md.	15	1
9	1931	University of Florida	10	2
10	1932	Toronto, Canada	16	3
11	1933	University of Wisconsin	14	1
12	1934	Washington, D. C.	7	2
13	1935	Oregon State College	6	2
14	1936	Wilburton, Oklahoma	9	3
15	1937	Philadelphia & N. J.	11	3
16	1938	University of Minnesota	17	4
17	1939	Blue Ridge College, N. C.	18	5
18	1940	Medical College of Va.	17	2
19	1941	Cranbrook & U. of Mich.	17	7
20	1942	Denver, Colorado	10	3
21	1943	Ohio State University	12	3
22	1944	Western Reserve Univ.	12	10

continuous representation at the Seminar over a number of years, are those that have progressive departments of pharmacognosy. It probably also follows that they are the schools that have modern and progressive curricula of the highest quality in all divisions of pharmaceutical instruction.

Deans, whose schools do not appear in the survey (who have had no representation at any of the twenty-two Seminars), or whose schools appear only once or twice in twenty-two years would do well to give this survey no little serious consideration.

Mr. C. F. Perkins of the Star Drug Company of McAlester, Oklahoma, has established a scholarship of \$400 at the School of Pharmacy of the University of Oklahoma. The recipient of the scholarship must be a male graduate of the McAlester high school of the class of 1945. The scholarship will be paid in amounts of \$50 for eight semesters.

Some Suggestions for Limitation on Enrollments in Colleges of Pharmacy*

LESLIE B. BARRETT

University of Connecticut, College of Pharmacy

For the fourth time we gather together in annual meeting surrounded by an atmosphere of tenseness created by war. Each year has presented problems, and while our discussions have not always brought about a solution, we have so far been able to carry on our work. Now we are almost four years nearer to the end of the conflict. Although the final stages of the struggle draw closer and the outlook is more encouraging, yet we are not unmindful that perplexing situations lie ahead.

The onset of the war was so sudden that full realization of the effects were not immediately felt. Time has made these so evident that we cannot afford to ignore the vast and far-reaching changes which have resulted, not the least of which may be summed up in the word "shortages." There is shortage, not among one, but all skilled and trained groups of individuals. There are also shortages in materials: metals, textiles, fuel, meat, butter, and cigarettes. This condition has made us all subject to curtailments, rationing, limitations, and restrictions.

Does all this mean that such conditions will be carried over into the post-war period? Or will the transition from war to peace be so sudden that we must buffer the reaction by anticipating events and preparing now to meet them?

This group is particularly concerned with what is going to happen in pharmacy. Much has been said and written regarding the shortage of pharmacists which, it is claimed, now exists, and will continue in years to come. Despite this view I, today, pose the question "Should enrollments in colleges of pharmacy be limited following the war, and what restrictions should the colleges impose upon themselves to bring this about?" By limitation, let us understand, is not meant expansion with limitation but rather the endeavor not to mate-

* A paper read at the annual meeting of District No. 1, Boards and Colleges, Massachusetts College of Pharmacy, March 26, 1945.

rially increase the normal number of graduates from our colleges.

Those who contend that a shortage of pharmacists is and will be a serious problem will be quick to denounce any limitation. They will deem it wise for the colleges to make every effort to enroll large numbers of students. In order to avoid future shortage they will want us to attract young people, even by over-playing the opportunities in pharmacy.

Manpower shortage has become almost a universal problem of this war; it has had its effects in all lines of activity. In pharmacy, however, even in this critical period, one may indeed question that a serious want of pharmacists exists. There have been occasions when the services of a physician or a nurse could not be secured, but who has been unable to have a prescription filled? Has anyone found it impossible to obtain some medicinal remedy because no pharmacist was available? These questions, of course, do not take into consideration the market in "drug clerks" who may be needed to man what, to appearance, is an excess of drug stores.

We, in our plans for the future should be concerned primarily with professional pharmaceutical service. From this standpoint it is safe to state that no critical shortage even now exists, and is unlikely to exist in the post-war period.

When the war is over there will be the possibility, if not the probability, that an overwhelming number of applicants will seek entrance to all colleges. This will be true if past experience repeats itself. Therefore, we should make plans to limit enrollments in colleges of pharmacy unless we wish a repetition of the conditions following the year nineteen eighteen when graduates poured out in numbers that cheapened pharmacy to a level from which it has not yet been restored.

When we look back, the two-year course of a quarter of a century ago might be blamed for this situation since it offered a short cut into a profession. Since that time we have witnessed an ever-increasing and tightening of requirements. First, there was the experiment with a three-year course, an attempt to lengthen the period of training. Later came the establishment of the four-year curriculum, bringing the years

of preparation to a level of that demanded by academic and scientific colleges. While this has advanced the standing of pharmacy, it is in reality doubtful that it has materially improved the quality or noticeably decreased the number seeking entrance to our colleges.

It is true that enrollments in colleges of pharmacy has decreased since nineteen thirty-two, the year that the four-year course became effective as a minimum requirement. However, we must remember that these have not been normal times. There were years of depression and little money which makes it difficult to determine whether the decreases were actually the result of a four-year course in pharmacy. Accordingly, it is safe to speculate that lengthening the course of study has not appreciably reduced the number of applicants.

In our own college, nineteen thirty-two is on record as the all-time low for entering students. The next five years, however, saw a gradual increase until nineteen hundred thirty-seven, the year that promised to be a turning point in the depression, was a banner year with a freshman class of seventy-five. This was just about the peak enrollment, equalling those of the early years of the college when the two-year course was the only one offered. Even during the past three years with a war on, entering classes have been larger than might be expected.

It appears, then, that lengthening of the curriculum has not been an important factor in reducing the numbers entering the colleges nor in creating a shortage, whether real or apparent. This is something that we might well bear in mind now when a year of pre-pharmacy college work is being considered.

Other means must be resorted to if we would limit our enrollments. The aim of the colleges should be to secure students of the highest possible quality rather than numbers. While this is in no small measure the responsibility of retail pharmacy, we have our own obligations to discharge. It seems reasonable to believe that, given superior students, training them thoroughly and carefully, we will eventually have graduates who will take pride in their work, will elevate the position of the profession, and will increase respect for pharmacy.

Are the colleges willing, ready, and in a position to accept this stand?

If the colleges wish to set a limit upon enrollments, the first step is to determine how many students we should enter. We might arrive at this figure through a survey and compile statistical tables, yet somehow I do not like this approach. Instead, why not set the total arbitrarily? This, it seems, might be based upon the number of students entering our colleges during the years nineteen thirty-two to nineteen forty-three or forty-four. This period is one of many changes and thus is a representative one. It includes the establishment of the four-year course, the depression, a short partial economic recovery, and, finally, the war. If there has been no critical shortage of pharmacists during these years, based upon enrollments, it is logical that this method would be a good one upon which to base our calculations. We might take the average enrollments of those twelve or thirteen years plus ten per cent. This plan appears a reasonable one to curb expansion. Otherwise we risk the danger of having a flood of graduates that will load the bargain counters with competitors for jobs rather than positions. Remember that a scarcity is a healthful situation for all concerned.

Once we have decided upon a basis for enrollment, how shall the colleges put the limitation into effect? One thing is certain, we do not want any group or organization to legislate the plan. We are already overburdened with rules and regulations. The more laws we have, the more difficult it is to enforce them, and there is always a way around a law if one is proficient in squirming. Any decision to effect limitations on enrollments must be reached by full cooperation and honest agreement among the colleges, and entered into with a whole-hearted support. It should be a clear understanding as to aims.

Rather than announce publicly that the college limits its enrollment by rule, the objective should be attained through selection of students. Also, the college should require of those accepted that they maintain a respectable record of scholarship as well as make manifest other qualifications while in college.

An important consideration that almost makes it necessary to curb enrollments is the facilities of the colleges, especially laboratory capacity. Some colleges do not have laboratory space to accommodate large classes even with sectioning. Since laboratory instruction and practice are fundamental in scientific and professional training, over-crowding does not give the satisfactory results which we should expect.

As a guide for the selection of students, chief among our aims should be that of choosing those of superior scholastic ability. High school records and standing alone are by no means the most reliable standards for judging ability since there is a wide variation in the requirements of different high schools. This does not mean disregarding the high school record, but too much reliance should not rest upon it. I believe that in addition, every applicant should be required to take regional entrance examinations, if one exists, such as those given by the College Entrance Examination Board. In addition, a stated score on the scholastic aptitude test should be a requirement. While there is no aptitude test in pharmacy at present, without doubt one could be devised, and would be useful in selection. This suggestion may appear extreme, yet offers a more reliable method to gain an estimate of ability than the one now in use, and there is no reason that it should not be given a trial.

Next to those of ability we would like prospective students with proper personal, social, and professional attitudes; those of neat appearance and good habits. These qualities are not easy to measure. Probably a painstaking well-planned interview is the best way to gain some enlightenment on these points. This might be supplemented by confidential reports from reliable persons. Recommendations of this type, however, have many weak points and usually must be discounted.

One aspect that has never been given sufficient weight is the financial status of the applicant. Too many students enter our colleges with almost a beggarly financial backing. Usually this does not contribute to a proper attitude and more than likely will result in scholastic failure. All we have in the end is a poor product. For the good of all concerned, the college will act fully within its rights to determine beforehand how well students are able to meet the financial responsibility of their undertaking. When a prospective student has met all

requirements but is not in a position to fulfill his monetary obligations, he should be advised to work a year or more before entering college. By attempting to earn his way, working as much as forty to fifty hours a week, attending classes becomes a side line, and he may spend five or six years doing a poor job of what should be completed in four.

Above all, we want to have students of integrity, honesty, reliability, and other commendable traits of character. These most desirable qualifications are elusive and the most difficult to evaluate in applicant prior to enrollment. Frankly, I do not know of any method for judging these traits of character, but the matter deserves careful consideration.

Finally, we want those students we select to measure up to the standards of quality upon which they were chosen. This will mean that we must be observant, not only of their scholarship after entering college, but their manners, habits, practices, and cooperation as displayed in their actions. Those who are found not to show evidence of accomplishment nor promise of being a credit to their class, the college, and to pharmacy, should be dismissed during or at the end of the freshman year.

These are the suggestions for limitation on enrollments in colleges of pharmacy which I offer for consideration. If we can accomplish but one step toward acquiring students upon a restricted and discriminative basis, the end will be worthy of the effort. Progress in the practice and recognition of pharmacy will at best be slow, a sort of evolutionary process. Our greatest hope lies in having the colleges graduate selected groups who, because of their qualifications and thorough training, will have respect for themselves and for pharmacy, and thus will inspire confidence and respect with the public of which they will be a part.

As surely as the return of peace will bring no Utopia on earth, it will bring none in pharmacy. Our problem may be likened to that of the nations in this war. Just as they must piece together the threads of a broken world, so must our efforts be to mend and reweave into the same old fabric of pharmacy a pattern just a little better than we so far have known.

Pharmacy Graduates and Commissions

WORTLEY F. RUDD

School of Pharmacy, Medical College of Virginia

What has become of pharmacy graduates and undergraduates who have entered the service has been of especial interest to us since the beginning of the war. In our institution we began early to keep reasonably close check on our men, and our figures to date are as accurate as may be hoped for about so transient a group as service men always are.

In January, 1945, we determined to canvass all the schools holding membership in the A. A. C. P. A return card, carrying the following questions, was sent to each dean of pharmacy in this group:

1. Total number of graduates of your pharmacy school who have entered the services to date.
2. Total number of your undergraduates who have entered the services to date.
3. Number of graduates who have been commissioned.
4. Number of undergraduates who have been commissioned.

Out of 58 thus questioned, to date answers have been received from 51. Believing that this information would be of general interest to pharmacy throughout the country, we have tabulated the results.

Arbitrarily we have grouped the schools under four headings, based upon their location, viz., Eastern, Far-Western, Mid-Western, Southern. It seemed wise to follow such a grouping in order to determine what effect, if any, location of the schools has had upon the relative number of commissions earned by the pharmacy graduates and undergraduates of the country.

	No. Grad. entered service	No. Grad. commis- sioned	No. Un- dergrad- uates entered service	No. Un- dergrad- uates commis- sioned	% Grad- uates commis- sioned
EASTERN GROUP					
Univ. of Connecticut College of Pharmacy	185	23	102	2	12%
*Howard University College of Pharmacy	13	0	37	1	0
Univ. of Maryland School of Pharmacy	259	131	72	13	51%

Massachusetts					
College of Pharmacy	402	112	195	21	28%
Rutgers University					
College of Pharmacy	365	71	106	3	19%
Univ. of Buffalo					
School of Pharmacy	125	35	50	2	28%
Columbia University					
College of Pharmacy	254	56	88	8	22%
Fordham University					
College of Pharmacy	195	36	66	4	18%
Long Island Univ.					
Brooklyn Coll. of Pharm.	260	35	48	6	13%
Duquesne University					
School of Pharmacy	131	40	66	5	31%
Philadelphia					
College of Pharmacy	454	136	163	13	36%
Temple University					
School of Pharmacy	276	60	118	5	21%
Univ. of Pittsburgh					
Pittsburgh College					
of Pharmacy	343	103	113	17	30%
Rhode Island					
College of Pharmacy	83	15	47	3	18%
West Virginia Univ.					
College of Pharmacy	58	23	27	0	40%

* Negro.

Average for EASTERN GROUP:

With Howard omitted—26%. With Howard included—24%.

	No. Grad. entered service	No. Grad. commis- sioned	No. Un- dergrad- uates entered service	No. Un- dergrad- uates commis- sioned	% Grad- uates commis- sioned
FAR-WESTERN GROUP					
Univ. of California					
College of Pharmacy	77	26	38	9	34%
Oregon State College					
School of Pharmacy	110	38	46	5	35%
Univ. of Washington					
College of Pharmacy	185	115	105	12	62%

Average for FAR-WESTERN GROUP—44%

	No. Grad. entered service	No. Grad. commis- sioned	No. Un- dergrad- uates entered service	No. Un- dergrad- uates commis- sioned	% Grad- uates commis- sioned
MID-WESTERN GROUP					
Univ. of Colorado					
College of Pharmacy	79	40	68	17	51%
Univ. of Illinois					
College of Pharmacy	237	77	130	3	33%
Indianapolis					
College of Pharmacy	184	20	84	2	11%

Purdue University School of Pharmacy	140	76	107	13	54%
Drake University College of Pharmacy	123	28	12	1	23%
State Univ. of Iowa College of Pharmacy	163	71	39	9	44%
Univ. of Kansas School of Pharmacy	93	41	44	15	44%
Detroit Inst. of Tech. College of Pharmacy	52 "Est."	25 "Est."	170 "Est."	10 "Est."	48%
Ferris Institute College of Pharmacy	500	25	200	0	5%
Univ. of Michigan College of Pharmacy	42	18	20	4	43%
Wayne University College of Pharmacy	70	25	34	9	36%
Univ. of Minnesota College of Pharmacy	67	15	19	2	22%
St. Louis College of Pharmacy	151	40	90	9	26%
State Univ of Montana School of Pharmacy	65	18	36	3	28%
Creighton Univ. College of Pharmacy	86	23	50	9	27%
North Dakota Agricultural College School of Pharmacy	95	36	53	18	38%
Ohio State Univ. College of Pharmacy	122	57	87	22	47%
Western Reserve Univ. School of Pharmacy	87	34	44	4	40%
Univ. of Oklahoma School of Pharmacy	175	80	No record	No record	46%
South Dakota State College Division of Pharmacy	102	34	36	6	33%
Univ. of Wisconsin School of Pharmacy	120	64	132	20	53%

Average for MID-WESTERN GROUP—36%

	No. Grad. entered service	No. Grad. commis- sioned	No. Un- dergrad- uates entered service	No. Un- dergrad- uates commis- sioned	% Grad- uates commis- sioned
SOUTHERN GROUP					
Alabama Poly- technic Institute School of Pharmacy	90	60	43	7	67%
Univ. of Florida School of Pharmacy	71	25	17	5	37%
Univ. of Georgia School of Pharmacy	70	28	45	3	40%

*Louisville College of Pharmacy	179	32	59	4	18%
Loyola University New Orleans College of Pharmacy	64	27	36	9	42%
Univ. of Mississippi School of Pharmacy	60	27	20	3	45%
Univ. of North Carolina School of Pharmacy	138	51	62	15	37%
Medical College of the State of South Carolina School of Pharmacy	12	2	7	7	17%
University of South Carolina School of Pharmacy	65	20	62	2	31%
Univ. of Tennessee School of Pharmacy	Data not available				
University of Texas College of Pharmacy	208	67	126	36	32%
Medical College of Virginia School of Pharmacy	141	63	93	13	45%

* Graduates outside of Kentucky not included.

Average for SOUTHERN GROUP—37%

I may be observed from the above tabulation that no separate classification has been given to schools in which ROTC was operative. It seems fair to assume that the percentage of graduates, and even undergraduates, receiving commissions would be high in such schools. Nor has a separate tabulation been made of the so-called independent colleges as against university connected or university supported schools. A casual survey of the figures indicates that for some reason there is a marked difference.

It should be noted that as nearly as possible the figures represent the same general date, that is, early in 1945.

Of late there has been a great deal of writing and some talk about how we should educate individuals professionally.

Probably the greatest flaw in preparing for a profession is in the fact that our thinking usually analyzes apparent results, rather, than the processes necessary for success or accomplishment. The secret of attainment or success lies certainly more in the enjoying of the procedure necessary to obtain results—than in doubting one's capacity. For shortcomings there are always many explanations and complaints. As some one has said "in most instances the imagination, which is the mainspring of conduct, has deteriorated to become a menace to sensible thinking." This situation or condition interferes with mature judgment.

Amasa Sproat, Pharmacist of Early Chillicothe*

CLARENCE M. BROWN

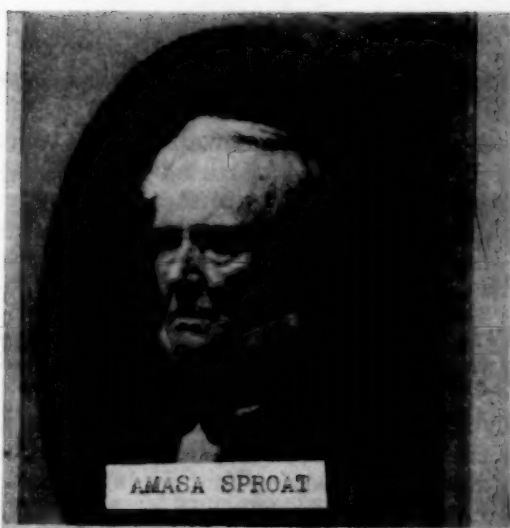
College of Pharmacy, Ohio State University

After the death in 1827 of Ira Delano, (1) the owner of the first drug store in Chillicothe, Ohio, his store passed into the hands of his brother, as executor. According to Delano's desires, it was, however, managed by his nephew Amasa Sproat for two years. In a letter dated July 22, 1830, Amasa writes; "My uncle (2) evinced a determination of retaining the shop in his own hands as long as possible—I left him and bought half of the shop, drugs, etc., of W. C. Johnson and entered into partnership with him." The Delano store was later purchased by the N. W. Thatcher and Company, and after passing through the hands of several owners, it became in 1885, the property of Lansing and Safford. In 1891, William Sulzbacher became a partner of Mr. Lansing. Today, after a century and a quarter, the store continues business as the Sulzbacher and Erdeman Drug Co. Thus two drug stores of Chillicothe stand as monuments to the memory of Ira Delano.

Mr. Johnson and Amasa Sproat continued together in business until the death of the former in 1840. Amasa then purchased the widow's half interest in the store, and continued as the sole owner for fifty years. In 1890 he sold his business to his two sons, Frank and James, and the store became known as the J. and F. Sproat Co. In 1895 James died and his interest was purchased by Benjamin Sproat. In 1908, C. H. Krick became a partner, but continued as such only until 1919 when he started a store of his own.

On April 1, 1852, a large portion of the business section of Chillicothe was destroyed by the "Big Fire." The fire started in a carpenter shop about two blocks from the center of town. Due to a heavy gale of wind the conflagration was forced eastward as a solid sheet of flame. For some reason the canal

*As to the article by Mr. Brown, I think it worthy of publication. It not only presents a good picture of an unusual American retail pharmacist living in a very interesting period of American history. It gives to this pharmacist a place among those humanitarians who occupied themselves with the invention of an artificial universal language. It was, by the way, a member of the other great health profession, medicine, that gave us the Russian physician and inventor of "Esperanto," Dr. L. L. Zamenhoff, whose artificial language gained wide recognition.—George Urdang.



MOXALPHIC LETTERS.

Plate 1

<i>Printing.</i>		<i>Hiding.</i>		<i>Hand.</i>	<i>Hand.</i>	<i>Key Words.</i>
<i>Capital</i>	<i>Body</i>	<i>Capital</i>	<i>Body</i>			
1. T	7	7	7	7	7	rEading
2. T	7	7	7	7	7	rEadmit
3. T	7	7	7	7	7	rEmit
4. T	7	7	7	7	7	in rEading and cEading Income Incomplete
5. T	7	7	7	7	7	
6. T	7	7	7	7	7	Insert
7. T	7	7	7	7	7	rAinbow
8. T	7	7	7	7	7	rAdiation in mAle
9. T	7	7	7	7	7	chAotic
10. T	7	7	7	7	7	frEsh mEre
11. T	7	7	7	7	7	Eny Entertain
12. T	7	7	7	7	7	Enjoy
13. T	7	7	7	7	7	mAsa, cAre
14. T	7	7	7	7	7	Envy mAgazine

which ran close by, was empty of water at the time, therefore, no water supply was available for use by the old fashioned fire engine. Nothing could be done to stop the fire from spreading, but fortunately not a single life was lost. The Sproat Drug store was completely burned save for the account books and one show case of toilet articles.

A rapid glance through the books saved from the fire reveals the names of many persons now well known in the history of Ohio. An insight into the conditions of the times and into the daily life of early Chillicothe is also afforded. House wives made their own soap, moulded their own candles, and did much of their own weaving and dyeing. Natural ice was sold by dry measure rather than by weight as it is today. A subscription to the Saturday Evening Post cost two dollars per year. Servants were paid very little, other than their keep. A dollar and twenty-five cents per week was considered to be a fair wage. Whiskey barrels were sold for use as wash tubs. Black sand was used as blotting material when writing letters, and cost six dollars and eighty-four cents per half barrel (three hundred and fifty-two pounds). Pens were made of goose quills.

The following items which are of passing interest were found under the headings of Expenditures:

Postage on a box of pills, sent to Vermont, and weighing one ounce	\$1.00
Cash towards Washington monument.....	1.00
2½ ounce Italian Mulberry Seed (3).....	2.50
Sewing girl (per day).....	.25
Draper Cloth, used for table cloths (a cloth manufactured in Ypres, Belgium).....	?
Sherman's Poor Man's Plaster.....	?
Two night caps.....	.16
13 lb. turkey.....	.50
1 bu. peaches.....	.20
1 lb. ginseng root.....	.16
Old whiskey (.25 per gal.).....	?
1 Hog.....	4.25

The Poor Man's Plasters mentioned above were a very popular article of trade, probably due to good advertising. The following testimonial was discovered in one Chillicothe newspaper—"Testimonial: Joseph W. Hoxie, Esq., so troubled with rheumatism as to be unable to dress himself without assistance, was enabled after wearing one (Poor Man's Plaster),

only one night, to get up alone in the morning, put on his clothes, and call at our office, with eyes beaming with joy and his tongue pouring forth the gladness of his heart, at the sudden relief he had received from the best of remedies." (4)

The sly humor of Amasa is shown by the many personal remarks penned at the side of various accounts:

- "Poor, but honest."
- "Gone to Halifax or somewhere else."
- "Drunken and independent through poverty."
- "Where he's gone and how he fares
Nobody knows and nobody cares."
- "Poor, I shall not trouble him."
- "I don't choose to sue him and pay the costs."
- "Oppressed by Poverty's stern mandate."
- "I suppose he forgot it, an honest man."
- "Poor Devil."

The fact that the pharmacist of that day prepared most of his own tinctures, fluidextracts, ointments, and other medicines may account for the following bills:

"From Lanham and Kemp, New York 2 cases gum opium.....	\$1195.13
"From Wm. L. Merrill and Co. 100 oz. sul. quinine.....	\$ 385.00

The following notation gives some idea as to the cost of transportation and freight rates:

Charges on goods from Philadelphia to Pittsburg by R. R.....	\$57.22
Drayage at Pittsburg.....	3.75
Exchange	1.22
Freight from Pittsburg to Portsmouth by boat.....	15.22
Forward to canal at Portsmouth.....	5.07
Canal charges, Portsmouth to Chillicothe.....	19.79

This is a total of \$97.20 for transportation of a single shipment of merchandise from Philadelphia to Chillicothe, requiring forty-two days.

Since counterfeit and 'Wild Cat' (5) money were common at the time, the purchaser of merchandise went personally to the trade market to buy his stock, paying for it from cash carried upon his person in a money belt. There were no such things as drafts and checks—no reciprocatory bank system.

An advertisement in the Scioto Gazette of May 7th, 1840, indicates the type of merchandise that could be found on the shelves of the Sproat Pharmacy at this date:

Glenn's Indian Hair Oil; Glenn's Oleine; Purified Bear Oil; Rowland's Macasser Oil; Antique Oil; French Pomatum; Bear's Grease; Indian Hair Dye; Essence of Tyre; Roman Kalydor; Cream of Almonds, Milk of Roses, Cosmetic Cold Cream, Michaux's Freckle Wash; Rose Lip Salve; Otto of Rose Soap; Orange Flower Soap, Glenn's Saponaceous Compound; Anguss Shaving Cakes; Guerlain's Ambrosial Cream; Savon Onctueux; Real Naple's Soap; Fariana Cologne Water; Lavender Cologne Water; Portugal Cologne Water; Court Plaster, Ede's Sweet Bags for Drawers; Prestons Salts; Otto of Rose in vials; French Wafers; Erasive (?) Salts; Fine Sealing Wax; Gold Leaf; Paints; and Varnish.

It is interesting to note how the Sproat family came into possession of the formula for making varnish. One day a certain D. L. Degolier, traveling from the East to Chicago in 1841, assumably on foot, and out of money at the time, offered to make a quantity of copal varnish for Amasa, from a formula which had been in his family for years. Before leaving Chillicothe, Degolier left the formula with Mr. Sproat. This special varnish was manufactured and sold in his store for years.

For many years the Sproat Drug Store furnished the ink used in the public schools of Chillicothe and the surrounding county. That Amasa was greatly interested in the manufacture of the liquid is quite evident for in his old formula book are many receipes for making it from various chemicals and vegetable substances. Each formula is written in the ink produced by it, and the colors vary from blue to blue-green, and from brown to black. The permanency of the colors after a hundred years is remarkable—only a few show any great degree of fading. Whether or not the colors as they appear now are the original ones, or have been changed by time cannot be told.

Amasa Sproat's ancestral lineage reads almost like an historical novel. "Robert Sproat (6), first man of the name of Sproat that came to New England, emigrated from Scotland about fifteen, or it may be twenty years, after our forefathers landed at the old Plymouth Rock and worked to pay his passage over to this country.

"The name of Sproat in Scotland was honored with a Coat of Arms, which was designated by three salmon with silver rings through their noses colored deep blue, pale blue, etc., and spotted over with silver and gold spots and to be found in the Scotch Heraldry. But what this Coat of Arms represented I never learned."

Robert Sproat settled in Scituate, Massachusetts as a farmer. He had four children. Robert, Jr., the second son who later became the grandfather of Samuel Sproat, settled in Middleborough, Mass., as a millwright. Three children were the offsprings of his marriage. The eldest of these, Zebidee, moved in 1797 to Vermont and settled on a farm near Pittsfield where he reared six children. Samuel, the second child, married Sarah Delano, thus connecting the Delano and Sproat families.

Zebidee Sproat, the father of Samuel had a most interesting and picturesque life. The Sproat home in Middleboro (Middleborough) was "an old gable roofed house (7) known as the General Ward Place." One room was known as the "Tapestry Chamber." Over the mantle was a large panel upon which was painted a portrait of King George III of England. Now Zebidee Sproat was a colonel in the American Army and of course could not put up with King George III. In order, therefore, to show his opinion of that royal monarch, he scratched off his head and left the portrait in that condition."

In the "Memoirs of the Early Pioneer Settlers of Ohio with Narratives of Incidents and Occurrences in 1775" by H. W. Hildreth (8) is found considerable information concerning Ebenezer Sproat. Col. Ebenezer Sproat, Jr., grandson of Robert Sproat who migrated from Scotland, was born in Middleborough, Mass., in 1752. His father owned one of the finest farms in that vicinity with a large commodious dwelling house which for many years before and during the Revolutionary War was used as a tavern. Ebenezer entered the Revolutionary War (at the age of 24) as a captain but soon became a major and then a colonel in the 10th Regiment of Massachusetts.

In 1876 Congress ordered the first survey of the land west of the Allegheny Mountains and Col. Sproat was appointed

surveyor. The survey was made under difficulties due to the hostility of the Indians. The Indians nicknamed the colonel "Hetuck" or "Big Buckeye" on account of his height.

Amasa Sproat had thus a rich heritage of staunch American and Scottish blood. He was not only a pharmacist of the old school, but was also intensely interested in education. He kept a 342 paged note book in which he wrote all sorts of information he thought might be useful, under such titles as: "Physical Science," "Arts," "Architecture," "Sword Exercise Commands," "Constitution of a Philonormal Club." (9)

On page 20 of this notebook is found the "Advice from my Father," which was given him upon leaving the parental home in 1818 to go to Chillicothe to learn the drug business from his uncle, Ira Delano. These words of wisdom are as true today as when given:

1. Never reveal secrets; never tell of anything that may prove to your own disadvantage now or in the future time or hath any appearance of it.
2. Trust no man, but have good securities from everyone.
3. Think all men to be your enemies, for you know not by their words whether they are friends or enemies, and if by chance you should find a friend, it would not come amiss. but be so much more than what was expected.
4. Be a friend to all men in appearance—use them handsomely, and never let them know but you would trust them in anything, till necessity compels you to do otherwise.
5. Learn to read men, as well as books, not from what they say, but from what they do—and find what their object in view may be, etc.
6. Think always before you speak, or act, be not forward in giving your opinions for thereby you may damage yourself.
7. Observe the opinion of everyone, but do not confide in it, see things as they are and not as you would have them to be.
8. Observe every movement of men. Know the circumstances of every one about you as far as you can unknown to them and within yourself.
9. Be faithful to your trust. Be honest and upright in all your dealings—and careful to obtain as far as in you lies a good name and reputation in the world.
10. Spend no idle time; but make a good and profitable use thereof, that you may be a benefit to yourself and a useful member of society.

There are in this same notebook a number of poems, some of them quite lengthy which were written in the evening, or at other odd moments. "Monody" was written on Sunday, January 28, 1827, when, as Amasa explains in a foot note, he was in a spell of morbid feelings; "Farewell to Windsor" was written in October 1824, upon his departure from Windsor, Vermont, upon his second visit to his old home; "The Piano" was written in September, 1826; his love for this instrument is shown in the third verse:

"Of all the instruments by man invented
To sooth our passions, to dispel our grief
To make us happy, sociable, contented
To dissipate our care, thou are the chief
And yet by poets (long?) neglected
Deserving most and least respected."

Amasa's greatest effort along non-pharmaceutical lines lies in his attempt to develop a universal alphabet or "Mon-alpha." He worked upon the "Monalpha" for many years and had considerable correspondence with Benn Pitman who had just published his text books upon shorthand. On September 9, 1861, he wrote to Pitman:

"My time has been principally taken up in attending to my drug business and family affairs until lately. I now feel great interest in our national difficulty. This rebellion is the most wicked and unprovoked ever known in a Christian country. Occasionally my mind seems to need some recreation from business matters, and I will turn my thoughts to 'Monalpha' (Endeavor towards a single alphabet) and work at it, while I have a little leisure. I can hardly say that I have any intentions of publishing anything more, but it is a kind of relief to me sometimes, to read and think over articles connected with the subject.

"I am glad you have succeeded so well in your () for producing plates for printing in relief. This invention of yours ought to bring you a fortune. I should think it would be of great advantage in map engraving. Indeed, I cannot see why it should not be of service in saving most of the cutting away labor in fine copper plate work, the lines left by your process being thick enough to be sharpened up by a tool afterwards.

Very Resp'y your friend
A. D. S.

On March 28, 1862, Pitman wrote to Amasa:

"I feel very grateful to the Divine Providence that in addition to my toils I have not known the stings of poverty. The annoyance and trouble of being short of means, I have felt occasionally, but I

have feeble hope and confidence not only being able to live, but of realizing sufficient from the sale of my phonographic books to assist greatly in spreading the 'Principles and Practice of Phonetic Painting (printing?). It has been a great toil to reproduce my books by means of my new process. The last of my standard books (The Phrase Book) I got to press yesterday. My fingers are sore with picking the plates, but my heart is light! - - - -

Adieu,
Ben Pitman

Finally in 1857, Amasa Sproat decided to have copies of the "Monalpha" printed at his own expense. The bill for printing two hundred copies was \$138.17, including the stereotype made by the Franklin Type and Stereotype Foundry of Cincinnati.

The title page of this booklet (also used as the cover reads:

AN ENDEAVOR Towards a UNIVERSAL ALPHABET

which shall have a letter for every distinct sound and articulation utterable by the human voice;
which shall have a distinctive form for each letter, that shall resemble no other, unless it is similar in power;
which shall retain that distinctive and essential form of each letter, throughout the range of and changes for
capital and body, or lower case printing
letters, capital and body round writing
letters, and short writing letters;
and which shall form the basis of an easy, practical system, adapted to all kinds of printing and writing.

By A. D. SPROAT
Chillicothe, Ohio.

CHILLICOTHE:
PUBLISHED BY THE AUTHOR.
1857.

A copy of the Monalpa booklet has been in the hands of a number of men and women, stenographers and others, who were confident they could learn the system quickly, but none have succeeded in reading the many pages of notes written by Amasa in Monalpa characters upon business, political and social matters. There is a feeling that much valuable information may be in these pages concerning the "Underground Railroad" operated during the Civil War. It is thought from one or two brief veiled statements written in various record books of the store that the upper rooms of the building were used as a meeting place for the Abolitionists of Chillicothe. If this is so, the fact that Amasa's wife was a southerner, may account for the fact that he kept all knowledge of such meetings from her, and thus used his Monalpa in keeping the records of those who might have escaped from the southern states to Canada via Chillicothe.

Amasa was a member of "The New Church" or "Swedenborg Faith." He firmly believed "that men have souls or have a something which is not matter and which thinks, feels, knows, reasons, and wills; which will live long after the material body has been cast off and is dissipated." This creed dominated his whole life. To him the Civil War was "the most wicked and unprovoked rebellion ever known in a Christian country." This faith and this statement again point to a possible helping hand in the Underground Railroad.

"A. D. Sproat (10) was a very religious man . . . as a follower of the Swedenborg Faith, he wrote extensively in a religious vein and corresponded with pastors and others of religious natures. His private life was above reproach in his own dealings. He did not compromise with right and wrong; in fact he was so implacable and austere, that the one point of criticism of his life is that he did not show more compassion on those of his own blood that could not live up to his own high standards . . . I am persuaded that his heartlessness was reserved mostly for his own family . . . in other words he was of such a religious nature that he would not temporize with evil or the evil of those that he dearly loved. Of those that were farther away I am sure he showed more compassion.

"I remember my father telling this story: One day a Mr. Purdum asked my grandfather at what price he held the House on West Second St. (Chillicothe)—which was forty or

fifty yards farther up the street than his own residence and on the other side. My grandfather told Mr. Purdum that the house was not for sale. Mr. Purdum's reply was 'Everything is for sale if enough is offered for it.' My grandfather thinking it would shut Mr. Purdum off without further ado, named a price that he regarded as prohibitive. Mr. Purdum replied very calmly 'All right, I'll take it at that price.' Amasa Sproat then went home and told his wife that he had sold the house. His wife said 'But I don't care to sell it.' He replied that he had already sold it. My grandmother said 'But you don't own that house—it belongs to me.' Grandfather said 'Yes, I know but I gave him my word.' My grandmother could not budge him from his position and he actually made her sell her house that neither wanted to sell simply because he had answered too hastily!"

An insight into the philosophical and romantic character of Amasa is afforded by the following extracts. "Recreation" was written August 31, 1831, in the album of Maria L. Wade, his sister-in-law, and the other on a loose sheet of paper laid within the album, written December 1828, to the young lady who two years later became his wife.

RECREATION

Every man is, doubtless, accountable to his Creator, for the use or abuse of his time, or as it has been called, "his estate," which, like the Talents in the Parable, has been given him to be improved.

Beneficial employment then, should absorb the principal part of the time of every individual, however well situated he may be in regard to this world's goods. Those pursuits which are the staple of his life should have for their object,—the providing for the subsistence of himself and connexions,—the accumulation and dissemination of useful knowledge,—and the promotion of the cause of Religion and morality. These, and their like, ought to employ the business part of our hours. Idle Fashion and Dissipation should have no part in them. But "non semper tendit Arcum Appolo," there must occasionally be a cessation from toil, and thought, a truce with exertion both of body and mind, that they may be refreshed and renovated, to commence again with renewed vigor and spirit. This relaxation is well expressed by the word recreation.—It is not to be a death-like stop to all our faculties, a sleep with open eyes; nor a change which would exhaust our animal spirits, instead of recruiting them; nor yet a train of amusements and pleasures which would enchant our imaginations so far as to unfit, or indispose us to return to busy life, and render more irksome our necessary engagements. All these are not recreation: they may be pastime, but it is time passed in uselessness and is so much of our es-

tate thrown away. Proper recreation then, should be some rational amusement, innocent in its nature and tendency, a change in the exercise of our bodily and mental faculties which shall renovate their powers, and gratify their proper appetences, and at the same time cultivate and extend our social relations, our knowledges, and our means of doing good. Such recreations cannot be considered criminal, or improper. They are necessary. They include all our different modes of enjoyment, which is far more real, abundant and unlimited than that obtained by the sinful devotees of pleasure and dissipation. Indeed much of our proper business may become recreation by being rightly varied, for it depends mainly on ourselves whether it be tedious, or pleasant.

NODUS HERCULES

(Knot of Hercules)

Let, my Dear Emily, this Knot
Be made an Emblem of our Lot;
Two Hearts you see together join'd.
So let our natures be combined.
This chord in which these verses run,
Twines round these hearts surrounded.
Let our desires by Love be bounded.
Again, this line full oft from one,
To the other heart doth gently run,
Connecting them so firm
That never can mortal man their ties dissever!
'Tis thus the stream of Love should flow,
'Tis thus our hearts should warmly glow,
Thus may we for each other burn,
And equal love for love return.

Another interesting sidelight upon Amasa Sproat's character is revealed in a series of letters received from Thomas Sproat, a cousin who, though financially unable to do so, entered Ohio University at Athens, Ohio, to attempt to prepare himself for medicine. The first of these letters from Thomas Sproat announces: "I am now at Athens Academy studying Latin to prepare for College, with the assistance of Nathaniel Price . . ."

"The scenery is beautiful and the inhabitants are kind, affable, and courteous, hence society is good - - - this place has been the seat of vice and intemperance and altho' some individuals are immoral and intemperate still, yet, perhaps there is no town of the same size where the people are, in general, more moral and who pay stricter attention to the duties of religion. This much for Athens and its inhabitants . . ."

In a letter written September 10, 1823, more is given about Athens . . . "You most likely have had many cogitations and recogitations about setting up in business in the apothecary line and settling down in the world; if you could pitch upon some good place. Now, sir, Athens is entirely destitute of an apothecary, for which they have felt the need this year most sadly, as the physicians do not pretense to keep only a small quantity (of medicines?), sufficient for their own use to deal out in pills and potions, and they too have been drained almost dry of the most essential medicines in practice."

Later letters tell of his difficulties in defraying expenses. An aunt offers him money if he will pay her a visit to get it. Amasa, who was planning a visit to Vermont, was asked to stop at the home of this aunt for the money. "I can receive the money by you as well as to be at the expense of going there myself." But evidently the aunt thought otherwise, for in a later letter Thomas says: "I shall leave this place (Athens) for New York (State) on Wednesday of next week . . . my journey will be pleasant, as it is the spring of the year. . . . It is possible, but not probable, that I shall complete my studies with a Doctor Townsend in Caledonia, N. Y. Some advantages might be derived, even if his knowledge should not be as extensive; as it would give rise to a new train of ideas and perhaps stimulate to greater exertion."

Did Thomas have a premonition when he wrote, "It is possible, but not probable, that I shall complete my studies with a Dr. Townsend"? An illness prevented the intended journey, for on September 9, 1823, he again wrote, "I had gone one mile beyond Chester (Ohio)" . . . the letter goes on to explain that he had become ill and had stopped at a nearby farm house to rest a few days; but evidently he grew worse instead of better for a letter to Amasa from the family who had been taking care of Thomas, caused him to go to his cousin only to find that he was "very low, and whom I think has the consumption." As a result of the visit Amasa wrote to Peter W. Sproat, Thomas' father who lived in Philadelphia, for financial help for his son.

On August 25th (1825) Amasa received the following letter from Peter Sproat:

Philadelphia
August 25, 1825

Dear Nephew

Your letter of the 31st instance was duly received. I felt much distressed at the unhappy condition of my son. I had promised myself that he would be a useful and graceful member of society. It grieves me that I have not the means to render him assistance in his sickness. Had his health continued good, he could have supported himself better than I could help him under my circumstances and delicate state of health. I can only wish him well if still living.

Peter W. Sproat

Amasa, after the refusal of the father to do so, continued to pay Thomas' expenses until he died on May 24th, 1826.

The personal diary of Amasa contains much of interest, much more than will ever be known unless the Monalpa characters can be read, for most of the pages are so written, except the headings which are in ordinary long hand. This book is written under different headings as: "Sketches and Memoranda of Various Incidents in My Life," "Commentaries," "Reminiscences of the Past."

From 1872 until he stopped writing his diary, long hand is again used. On January 28th, 1872, he says: "Eleven years since I have written in this book. I complete my seventieth year in good health . . . our lives have encountered sorrows, but the Lord has helped us with as smooth a course as most people have, and probably as smooth as was good for us . . .

"Except my memory, I do not know that my mental faculties are impaired. I attend daily at the store, but let James and Frank do nearly all the business.

"I still occupy my mind at times on my Monalpa and althou' I have no hope that it will be published during my life time here, I have full faith that it will be a book of great use.

"I am one of the five directors of the Chillicothe National Bank and have been one since its organization. I was a director for many years in the Chillicothe branch of the State Bank of Ohio."

On Sunday, December 21st, the following entry was made: "Today is the fiftieth anniversary of our wedding. Mrs. Sproat was adverse to having any celebration of the day, and it passed off quietly as any other day."

On January 28th, 1881, he wrote: "I was taken with palsy of my tongue, about the middle of Feb'y last, so that my speech could be hardly understood. On February 27th, 1880, I was stricken with paralysis on my right side. My right arm and hand rendered entirely helpless (the writing is very hard to read and was apparently written by use of the left hand.) My right leg is so recovered that I can walk around the room by help of a crutch and some one to guide me. I have a wheel chair . . . in which I sit most of the day. . . ."

"Sunday, January 28th, 1883: I still live and have confidence that I shall continue to live forever, entirely free from . . . palsy and all other disorders that flesh is subject to. I have this belief greatly strengthened by the writing of Swedenborg."

One year later to the day the last entry is made: "Wherefore am I left here yet? I am of no service to myself or anyone else. I am fully convinced that the Good Lord knows what is the best time for each one of us to be taken home and that is when they are taken. We cannot comprehend God's Providence from our short sightedness."

Amasa D. Sproat died November 26th, 1885.

REFERENCES AND NOTES

- (1) *Ira Delano*, C. M. Brown: *Journal A. Ph. A.*, Practical Edition, Feb. 1943.
- (2) Brother of Ira Delano.
- (3) At this time the raising of mulberry trees for the culture of silkworms was being tried out in the United States.
- (4) From a speech given by the son of Amasa Sproat and reported in the *Chillicothe News-Adventure*; Dec. 17, 1927.
- (5) *Wild Cat money*: A few private citizens would club together to form a bank, receiving deposits, running for a while, get into debt and break up.
- (6) Written by Samuel Sproat, the son of Zebidee Sproat and the father of Amasa Sproat.
- (7) From a letter written on April 19, 1881, by Thomas C. Sproat, Attorney and Councilor of Law in Tauton, Mass.
- (8) H. W. Derby and Co., Publishers, Cincinnati, Ohio.
- (9) No one is sure what the purpose of this club was. The Constitution is written in "Monalpha" characters.
- (10) From a letter by Malcolm Perrin Sproat, grandson of A. D. S.

ACKNOWLEDGMENT

I am deeply indebted to Malcolm Perrin Sproat, the present owner of the Sproat drug store of Chillicothe, Ohio, for the use of letters, account books and other material written by his grandfather, Amasa Sproat.

C. M. B.

Editorials

The Need of Conventions

Strength of convictions, initiative, ideals, and far-sighted vision of leaders in any field of endeavor are necessary to further and maintain a flourishing and virile pursuit. However, there must be fostered a unifying or coordinating perspective force among leaders. The printed word is not sufficient. Leaders must gather and communicate with each other in regular meetings not only to bring about this unification of purpose but also to broaden the horizons of wisdom. Organizations are kept alive by active individual participation of its members. The fundamental progress of humanity has come only through the exchange of ideas of men.

We must meet this year. A great number of us have found it impossible to attend the last few annual conventions because we were teaching in the accelerated program and could not leave our posts. Acceleration is over and we are ready and anxious to contribute to the many problems before us, but we need the confidence and stimulation that emanates when men gather and exchange viewpoints. Our chosen leaders must make every effort to provide us with a chance to come together.

Roy A. Bowers,
University of Kansas

Changing the Pharmacy Curriculum

Many pharmaceutical activities in scientific, administrative, and educational fields are being usurped by non-pharmacy trained men. Experience and observation need not be over a prolonged period to furnish examples in support of this statement. Industrial laboratories conducting pharmaceutical research in many cases have taken men without pharmacy backgrounds for numerous technical and scientific operations. The employment of such men for various administrative duties is also readily apparent. Much of this usurpation is undoubtedly due to our failure either to recognize pres-

ent day needs and trends or else our unwillingness to do something about it. Employers often cannot be blamed for looking other than to our pharmacy graduates for trained personnel. In the educational field, chemistry departments in certain cases are placing increased emphasis on the chemistry of drugs and the relation between chemical structure and physiological action. Our schools and colleges have chiefly been training men for work in sales, detail, and retail fields, while departments of chemistry and other technical units have been training many men for pharmaceutical research, control, and production.

By raising educational standards the presence of pharmacy-trained men in the professional capacities of drug stores has been assured for the future. And it may be by altering our present educational set-up, we can prepare well-trained men in pharmacy for a greater number of these technical and specialized activities. We need to critically study our curricula, modify them, and innovate according to our facilities and good judgment. The post-war years will create a demand for more and better trained men in our profession and the present period of changing ideas and of adjustments is a good time to make plans for future education in pharmacy. Dean DuMez (October 1944 edition of this Journal, pp. 606-7) stated that among the shortcomings in our schools and colleges is "... the failure of most of the colleges to alter their curricula to meet the changes in pharmaceutical practice brought on by the rapid advances made in the medical sciences within the last several decades." That we have made strides in the past to better pharmacy students is attested by our raises in educational standards beginning around 1892 when the first four year course was offered and continuing down to about 1932 when this course was made mandatory. It has been pointed out (*ibid.* p. 609) that we must de-emphasize some of the old courses as botany, pharmacognosy, and galenical pharmacy and institute training in biochemistry, pharmacology, bacteriology, physical chemistry, industrial pharmacy, public health, and the like.

In order to fulfill our function in the future and to make greater advances we must consider changes and emphasize our educational program. This may be accomplished in a number of ways, among which are: 1) Establishment of a

pre-pharmacy curriculum. 2) More efficient utilization of the four-year period now allotted to us. 3) More and better facilities for graduate work in our schools and colleges. That this need for more schooling is recognized is substantiated by Dean Kuever who notes (*ibid.* p. 634), "In other pharmaceutical meetings the pre-professional year has come up for careful consideration with the thought usually prevailing that the time has come when it is indeed a real necessity."

H. O. Thompson,
University of Georgia

The New Mexico legislature has just appropriated funds for the establishment of a college of pharmacy as a part of the State University at Albuquerque.

Dr. E. L. Newcomb, secretary of the American Foundation for Pharmaceutical Education has announced that a third allocation of \$100 is now made available for each of the schools holding membership in the A. A. C. P. or accredited by the A. C. P. E. The Foundation has also temporarily taken over the distribution of the literature which has been prepared by the National Pharmacy Committee on Public Information. It has also taken over the distribution of the booklet "Pharmacy as a Career" earlier issued by the National Scholarship Committee, which committee has now been liquidated. For any of this material write Secretary Newcomb.

Word has been received that Lt. Duane Parker, USAAF, who graduated from the University of Michigan in 1942, has been officially declared dead. The bomber, of which Lt. Parker was navigator, crashed in the English Channel, on February 22, 1944. Some of the crew were found dead on a life raft, but no trace of the others, including Lt. Parker, could be found.

Prof. W. D. Strother, for twenty years a member of the teaching staff of the University of South Carolina, has resigned in order to operate a drug store at Clarksburg, West Virginia. Prof. D. A. Galgona has taken over his work in the school.—Approximately 90 per cent of the students enrolled belong to the student branch of the A. Ph. A. During the past year several scientific meetings were held at which students gave papers and outside speakers were heard. Several films pertaining to pharmacy were shown. Governor Ransome Williams of the State of South Carolina is a pharmacist.—Monre E. Kidder, director of the drug and oil plant project of the California Polytechnic School at San Luis Obispo, recently spoke to faculty and students on the "California Drug and Oil Plant Project."—Bennett Lott, president of the Student Branch of the A. Ph. A., has been elected to membership in Blue Key, national honorary leadership fraternity.

The President's Page

No subject should be of greater concern to our administrators and staff members than the improvement of instruction. The following comments on this subject have been taken with modifications from the Report of the Purdue University Committee on Postwar Planning on which the writer served. In the next issue of our Journal, I expect to comment further on teaching organization in schools of pharmacy.

The Improvement of Instruction in Pharmacy

Effectiveness of Schools Dependent Upon Good Teaching:

In considering the future development of pharmaceutical education it is necessary to emphasize the fundamental importance of good teaching. Our schools of pharmacy exist for the primary purpose of offering instruction, and in the final analysis the quality of that instruction determines the effectiveness of our schools. This self evident fact needs to be continually emphasized in order that concern with administrative arrangements, curricular plans, and all the necessary mechanics of operation may not obscure it.

The factors that make for good teaching are complex, varied, and unique in some degree for the individual instructor. It is an over-simplification to suggest that good teaching automatically follows from any single factor of scholarship, pattern of teaching methods, or technic of teaching. Teaching is not an automatic performance in which one best procedure can be determined and uniformly put into effect. Involving, as it does, relationships between human beings it requires insight and adaptation to the circumstances and purposes of instruction. It follows, therefore, that any school in attempting to maintain good instruction or improve instruction cannot achieve this end by the simple process of any specific administrative organization or series of regulations. Rather the attempt must be made to determine and provide, insofar as possible, the circumstances and conditions which appear to contribute toward a high quality of instruction. The factors to which attention is called in the following paragraphs are neither novel nor all-inclusive. They are fundamental.

Good Teaching Should Be Given Recognition:

The individual staff member, as does any individual under similar circumstances, will tend to direct his attention to achieving those things for which recognition and rewards are extended. An administrative policy which primarily rewards activity in research, writing, or special projects, and by inference relegates teaching responsibilities to the level of a routine task will not stimulate a staff to direct time and study to considering ways for improving the quality of instruction. These other activities have their place and are not without their relationships to good teaching, but their importance should not obscure a basic teaching responsibility. Admittedly, it is difficult to accurately measure the quality of teaching. This, however, only points to the need for careful consideration of ways of appraising instruction. If good teaching is to be stimulated, then it follows that each school by announced policy and action should clearly inform the individual staff member that to the extent that teaching is his responsibility promotion and recognition follow high quality of work in that field.

Scholarship Essential for Good Teaching:

A primary requisite for maintaining a high order of instruction at the professional school level is a teaching personnel distinguished for true scholarship. Although it does not follow that scholarship will in and of itself automatically result in good teaching, it is difficult to believe that the instructor who is not a real scholar in his field will communicate a very deep insight or love of learning in that field to the student. In terms of educational policy two inferences may be drawn. (1) Scholarship should be one of the major criteria employed in selecting members of the staff. (2) Time and encouragement should be offered the staff member for research and scholarly activity, not only because of the value of these activities in themselves, but also because of their potential contribution to the improvement of instruction.

Field Experience Can Contribute to the Vitalization of Instruction:

Much of the instruction that is carried on at the professional level is in the so-called practical or applied fields. To

the extent that the instructor is aware of the situations and circumstances under which the materials of the instruction are presumably to be put into practice there is a greater probability that the college instruction will be functional. In a world where technology in producing rapid changes in all of the practical fields it becomes highly essential that means are adopted for keeping the instructional staff in close touch with that field. This suggests the need for a definite policy which, (1) Encourages the individual staff member to maintain contacts with the field and (2) Provides the opportunity for such contacts to be systematically maintained.

Good Teaching Involves Human Relations:

Teaching ultimately involves a relationship between the teacher and student. "There exists an unfortunate stereotype of college instruction as a process wherein the instructor, elevated and remote from a generalized entity called a class, performs in solitary splendor, more or less oblivious to the individual members supposedly benefiting from that instruction." Although this in practice has never been true, except in degree and particularly where special lecturers or part time instructors are used, it is important to emphasize that learning does not take place except as the instructor succeeds in communicating with the individual personalities in the class and stimulating these separate individuals into the self activity necessary for learning to take place.

Within any class there inevitably exists many individual differences in the students, differences in ability, background, interests, and motivations, to mention but a few variables. To the extent that the instructor is aware of these differences and has some familiarity with the individuals receiving instruction, there is a greater probability of good teaching. This type of relationship is dependent in no small degree on the attitude and philosophy of the instructor, but it can be stimulated by administrative emphasis and procedures. Good teaching can be furthered by a policy which, (1) Places on the instructor the responsibility for obtaining information concerning, and making adaptation for, the individual student, and (2) Establishes teaching and student loads which provides the instructor with sufficient time for contact with individual students.

Departmental Study Can Stimulate Good Teaching:

It is within the separate divisions of instruction that group study on the general problem of improving instruction can most effectively be carried on. Tradition has established each individual instructor as almost the sole arbiter of the content and method to be utilized in the respective courses. This policy has given the creative individual the freedom that has produced great teachers. Certainly it would be unwise to suggest procedures which would standardize instruction and restrict the creative teacher. However, staff study and conferences on the problem of good teaching can be stimulating and broadening without being restrictive. Particularly does it offer the beginning instructor an opportunity to benefit from the experience and judgment of older staff members.

A positive program of study and action at the teaching department or group level upon the problems of instruction can do much to improve the quality of instruction. Such a program among other things should: (1) Stimulate experimentation with new method of organization of instruction and evaluation; (2) Provide a way of supplementing the background of even the experienced teacher; (3) Provide a valuable means for inducting the new instructor into the teaching staff; (4) Provide a means for considering the use of new instructional aids; (5) Correlate instruction in the various courses.

Appraisal Should Be Made of Newly Developed Instructional Procedure:

The demand for rapid and intensive training during the war has resulted in the development of new instructional procedures and aids. These wartime developments have particularly emphasized the intensive use of visual and auditory aids and acceleration through concentrated intensive study in a limited field. Enthusiasts for these methods, primarily developed in the Armed Services, have argued that the reported success of these methods proves the inefficiency of typical instructional procedures and calls for a revolution in teaching procedures in our schools. On the other hand, there are those who point out the more limited objectives of the educational program of the Services, the differing motivational factors and other atypical elements and by inference reject the idea

that a professional school can greatly profit from an examination of such newly developed educational procedures. Neither extreme view appears valid or logical. With full recognition of the differences in objectives it appears that the college staff may gain from careful examination and appraisal of educational technics used in the educational programs of the Armed Services. Particularly, does it appear worthwhile to give careful consideration to the possibilities of more extensive use of visual aids and recordings. It would appear desirable for the separate divisions of instruction to give careful study to the service educational technics related to their specific field, and appraise and consider the try-out of any promising technics which have been developed in these programs.

Assistance Should Be Provided the Beginning Instructor:

The instructorship is typically a period of trial and exploration. In a sense it is a period of internship. University tradition is largely against any system of close supervision of instruction, and probably wisely so. However, the avoidance of systematic guidance and observation of the beginning instructor appears to be neither a logical nor an intelligent procedure. In no other professional field does such a situation exist. Neither does it appear adequate to leave such guidance and assistance to chance and accidental assistance that may be received from other staff members. Actually in practice considerable assistance is offered to the beginning instructor. However, the process could be strengthened by a generally recognized policy of responsibility. A definite system whereby the administrative head or some appropriate and designated staff member has the responsibility to assist and guide the beginning instructor in the problems of organizing and carrying on instruction should benefit both the school and the instructor.

Specialists in Professional Subjects:

One of the greatest handicaps to highly competent instruction in our schools of pharmacy has been the diversity of subject matter assigned to a single instructor. The large number of small, under-staffed schools is largely responsible for this condition. Even in our larger schools, however, it is not unusual for an individual to be assigned to teach two or more subject matter fields. Such assignments make it impossible for the instructor to keep abreast of recent developments in

any one field and lead to the teaching of an overabundance of obsolete subject matter. In the promotion of good teaching there is no substitute for knowledge of the subject by the instructor. Medical and chemical schools and a few schools of pharmacy have established the value of specialization in teaching.

When our administrators and teachers gain the concept that all science and technic applied to the preparation and distribution of drugs is pharmacy we will have made real progress. Then it will be possible to have specialists in theoretical pharmacy, dispensing pharmacy, manufacturing pharmacy, pharmaceutical chemistry, pharmacology, etc. on our staffs. Because specialists can develop a single field, our schools will abandon the emphasis on obsolete technics and products.

Glenn L. Jenkins

Dr. Thomas D. Rowe, assistant dean, is leaving the Medical College of Virginia in June, to assume a similar position at the College of Pharmacy of Rutgers University. He will be succeeded at Virginia by Dr. R. Blackwell Smith, Jr., who is now connected with the Federal Food and Drug Administration in Washington. Dr. Smith is a native Virginian, having been born at Petersburg in 1915, a son of a successful pharmacist. He was an honor graduate of his native town high school and was graduated from the Medical College of Virginia in 1937 with Rho Chi honors. He later obtained the master's degree at the University of Florida and the doctorate in the department of pharmacology at the University of Chicago.—The annual Rho Chi dinner will be held on May 23. Dean J. P. Gray of the School of Medicine will be the speaker and Elinor Boothe will be initiated into Rho Chi.—Dean W. F. Rudd will be the commencement speaker at the graduation exercises of the Richmond Extension of the College of William and Mary.—Dr. Karl L. Kaufman will assume a large part of the work in the department of pharmacy that has been carried by Dr. Rowe.—An internship in the hospital pharmacy will be available on July 1. Applications should be made to Dean Rudd.

Dr. R. P. Fischelis was one of the speakers at the Twentieth Anniversary Celebration of the school of pharmacy of Duquesne University. Of that celebration Dr. Fischelis wrote,—“I was impressed with the dignity of the occasion and the friendly and loyal hold which Hugh Muldoon has on his alumni and students. I was further impressed with the extent of the contribution he is making to the university as a whole. They apparently have an ambitious program for the future, and I am sure that under the Dean's able direction the institution will become a greater factor in pharmaceutical education in Pennsylvania as time goes on.” Dr. Fischelis also spoke recently at Buffalo before the combined Western New York Branch of the A. Ph. A. and the University of Buffalo Student Branch. Of this experience he said,—“Here I was greatly impressed with the young people in the Student Branch on whom we may rely for the future of the A. Ph. A. and think they will make a real contribution.”

The Editor's Page

Recently the American Foundation for Pharmaceutical Education has requested an expression of opinion from the members of the American Association of Colleges of Pharmacy as to the best policy for the Foundation to follow with respect to the appropriation of funds for undergraduate scholarships for the academic year 1945-46. The secretary of the Foundation has recently reported that approximately 200 scholarships have been underwritten to date and with but two or three exceptions the students have maintained excellent scholastic records. The problem of policy raised by the Foundation revolves around the three questions stated below. These questions have been submitted to the deans of the colleges for their reactions. They are to be answered by yes or no.

1. Should the Foundation increase the amount of funds which it has in the past made available to individual colleges of pharmacy to be used for undergraduate scholarship awards?
2. Should the amount of funds made available by the Foundation to individual colleges for undergraduate pharmacy scholarships be based on enrollment with due consideration to cost of tuition and other fees? (*e. g.*, Schools with larger enrollment should have more funds available for undergraduate pharmacy scholarships than those with very small enrollments, and schools with relative high tuition costs require larger amounts to cover these scholarships than schools with relatively low tuition costs.)
3. Should the Foundation endeavor to provide funds to cover undergraduate pharmacy tuition for *all* students having high scholastic standing and who are in financial need?

This brings up again the whole matter of the giving of scholarships. The Foundation is seeking how it may use its funds wisely and for the best interests of pharmacy. We should make every effort possible to help the Foundation to attain this objective.

I am afraid I shall have to say that any expression of opinion on the part of deans as to the value of the undergraduate scholarships at present is nothing but a matter of individual opinion. It is not based upon any scientific study with facts to substantiate it. In the case of pharmacy, that could hardly be done on such short notice but it is something that should be done in fairness to the Foundation and for our own satisfac-

tion. It is my own opinion and I know it does not conform to the commonly accepted point of view that "financial need" should be deleted as a basic factor in the granting of scholarships. I cannot see any more logic in granting a student a scholarship on the basis of financial need than I can in awarding a man membership in the Order of the Purple Heart on that basis. Excellence of scholarship should be awarded wherever it is found, irrespective of financial need. After an experience of forty years with students I have found that they prize scholarships mostly because of the meritorious implications and not because of the remuneration involved. They look upon scholarships as we adults look upon the Ebert prize or the Remington Medal for the distinction it gives them and not for the monetary value. Thinking the matter through, I can never recall having known any person, student or man of maturity, who enjoyed being branded as in financial need. When we get down to the actual problem of determining the financial need of a student we find we are up against another problem. Just now I know of no student in financial need. One has to concoct some kind of a definition not found in dictionaries, such as "One who partly supports himself," or, "One who has a father who is a banker but who may go broke when the crash comes." We met this very situation in N. Y. A. days. One boy in my institution got an N. Y. A. job because his father was a banker and banks were not safe. Another got one on the basis of his father being assistant superintendent of a school system of a town with 100,000 inhabitants, on the grounds that his father might someday lose his job.

Today we have to beg students to take jobs on the strength that they will learn something by doing the work and many a student takes a job for that very reason.

If we are going to continue to give undergraduate scholarships, the adoption of the policy suggested by question number 1, will increase the problem of making awards in a simple arithmetical progression in proportion to the number added. If the policy in question number 2 is adopted, the awarding of scholarships as between institutions will become chaotic and a nightmare. If the policy suggested by question number 3 is adopted, great harm will be done to pharmaceutical education and practice. There will be a great group of students seeking scholarships in pharmacy for the sake of getting a college

training with the social privileges that go along with it, but have no particular interest in pharmacy. I have seen such a situation develop in the Presbyterian Church where men have joined my own church so as to get help through the seminary and they got it. But how a man can become either an intellectual or spiritual leader of men without acquiring his own leadership the hard way is beyond my comprehension. There was a time in the not distant past when the cry was to keep the educational requirements for the study of pharmacy low for the sake of the "poor boy." In so doing we entirely ignored the fact that low educational requirements create lesser opportunities and also that the poor boy, if he has anything in him, takes care of himself and wins in spite of his financial status.

I believe in making loans to responsible students and grants or scholarships where something in return is required from the student and where that something will be of educational value to him. That is an entirely different matter than to throw something at him just because he is poor and places no obligation upon him. I believe in improving the equipment of our undergraduate colleges and our libraries and the establishment of chairs for research activities in the pharmaceutical sciences which will make for greater intellectual development and spiritual growth so that, in the language of Dean Alpheus W. Smith of Ohio State, "Men may be prepared for creative work which will develop and recreate and vitalize and inspire the professions." This it seems to me must be the trend that we must take in advising the American Foundation for Pharmaceutical Education as to how to best use its funds for the improvement of pharmaceutical education and practice.

We have commended most highly, in the January issue of the *Journal*, the 1944 report of the American Council on Education. We have called it masterful, scholarly and prophetic, and it is. It furnishes mental pabulum for everyone engaged in any field of pharmaceutical endeavor. Both the educational group and the practicing druggist should take heed, for without the leadership of the first group and without the support of the second, pharmacy can expect to do nothing but fall short of its mission. Especially does this report challenge

the teachers of the biological sciences, physiology, pharmacology, bioassay, bacteriology, serology and immunology, to a greater effort, for without this development the pharmacists cannot practice his profession intelligently, or relate his work to, the other health sciences intelligently.

One of the major subjects discussed in the Council's report is the lack of autonomy in many institutions of the pharmacy faculty and the need of correcting this situation. It is a most important problem. If the pharmacy faculty is not autonomous it is not a college faculty. It has been suggested that perhaps it would be wise to have more faculty men teaching the basic sciences that have had background training in pharmacy so as to offset the academic influence. From a superficial point of view this might seem to be the thing to do, yet the idea is fraught with danger. It is that very academic influence that in the last three decades has brought pharmacy out of its provincialism and given it a place of influence on the campuses of our great universities. Someday, when time permits, we expect to write a chapter showing the contribution that academically trained men without any pharmaceutical background training have made in placing pharmacy in a sphere of greater influence. My own vision of pharmaceutical education has been moulded by university presidents whose specialties were the humanities rather than by men who were more narrowly trained in the pharmaceutical field and even in the pharmaceutical field such men have frequently pointed the way. Furthermore, it has been my personal experience to find that pharmaceutically trained men have created quite as much dissatisfaction over pharmacy among pharmacy students because frequently, they wish to be known as chemists rather than as pharmacists. A study of what has taken place in the American Association of Colleges of Pharmacy in the last thirty years will show that men who have been trained in chemistry, botany, physiology, pharmacology and the other laboratory sciences have contributed quite as much to the pharmaceutical curriculum as those who have had background training in pharmacy. It should be noted also, that at the turn of the century, a medical degree was considered almost essential for teaching the laboratory sciences in a medical school. Today, administrators are not seeking such men but rather are looking for men who have had more extensive

training in their special fields. Only in the case of pharmacology is it still thought desirable for a teacher to have a background training in clinical medicine in addition to the specialty.

But in the Council's contention that the college of pharmacy faculty must have complete autonomy we are in complete agreement and no group will support that contention more loyally than the members of the faculty who have not been pharmaceutically trained.

Dean Charles E. Mollett of the University of Montana writes that "with enlarged and fine quarters, more financial support is necessary, but the opposite has occurred. The need of a secretary for the school of pharmacy, student assistants, help in the library, furnishing the model pharmacy room, completing desks in the pharmacology laboratory, and support of the work in the drug plant garden as well as needs for permanent equipment and funds for travel are my major troubles." All of which serves to remind us again, that an institution cannot grow without increased financial support. Neither can it grow without assuming greater responsibilities which if met, will require more money and if they are not met, an institution falls short of its mission. In our planning we must see to it that the service to the public justifies the expense.

The public must be educated to the inevitable results of this policy of expansion in education. Exactly the same principle is involved in the improvement of medical service. At present, the average individual is looking forward to a day when the cost of medical service will be lessened. With the building of hospitals and nurses homes and the increased equipment for the treatment of the sick and for the control of disease and the development of medical specialties, the cost of medical care will be enormously increased. Whether such increase will stand the glare of publicity will depend entirely upon whether we can show a corresponding increase in benefits to community and national life. Greater service in the fields of education and health care means a greater cost. We may be able to find a more equitable distribution of that cost.

In the March number of the *Journal of the Association of American Medical Colleges* is an editorial on "Small Town

Medical Practice" which is worthy of reading by every pharmaceutical educator because what is true of small town medical practicing applies equally well to the work of the small town druggist. The statement is made that it is becoming increasingly difficult to induce the young medical graduate to locate in a small town. It suggests that medical schools are largely responsible for this because the student, whether intentionally or not, has it inculcated in his mind that one cannot practice medicine without all of the conveniences that a populous center affords. It calls the attention to the fallacy of this statement because there are many small town practitioners who have well equipped laboratories and offices which they use intelligently and competently. It may be true that they may have to call in help which is always available in every community, namely, the ex-nurse, the druggist and other intelligent persons who are willing and anxious to cooperate in community service. Furthermore, there are people always ready and willing to cooperate in the establishment and the conduct of a small community hospital. What the medical student needs to develop is self-reliance, independence, strength of will and character. These characteristics are rarely developed in hospital internships where every act of the intern is supervised. Nothing develops these qualities like isolation from fellow practitioners. A suggestion is made that in order to give the medical student an insight into what a small practice is like, it might be a good plan to give every medical student in his senior year, a month of experience with a carefully chosen practitioner in a small community. Such a procedure might go far in obtaining a more equitable distribution of physicians in normal times. This unequal distribution is largely the cause of the dissatisfaction on the part of the public with the present system of private practice and which urges the layman to seek better medical service through state or socialized medicine.

The sentiment and philosophy expressed here appeals to the writer, who if he had become a medical practitioner would have sought just such a country location as is here indicated. And if he had elected to become a druggist, he would have sought the country side. The speaker who got the greatest hand from the students in my own institution and who is most frequently mentioned by them was a graduate of twenty-five years ago who in his quiet, homely way told the students the

pleasure he had had in operating a country drug store. Some day I hope to induce him to put in print his story, "On the Joys of Running a Country Drug Store."

For several years one of the subjects of major interest to both educators and practicing druggists is that of "refresher courses." What should such courses consist of, how much time should be allotted to them, and what should be their objective. Obviously it depends upon what the practicing pharmacist wishes to gain by such courses and this will vary with different groups. If the group wants to obtain new laboratory or compounding or merchandising technics, then these courses should be several weeks, perhaps two or three months in length. If on the other hand the group is made up of pharmacists who are proprietors, men of maturity and wide experience, who can leave their stores but a brief space of time, the program should be short, two or three days in length at most and of such a content as to give the group the maximum amount of information concerning the trends in pharmacy and the related health sciences, a knowledge of the newer synthetics, the newer trends in pharmaceutical technics, the latest developments in biological methods and products and their practical application in therapeutics, some effective merchandising suggestions and trends in the educational program. Such a program should not only be informational, it should be inspirational as well.

An ideal program of this nature was presented at the Eighth Pharmaceutical Institute at the University of Minnesota the last three days of January of this year. The program and time schedule is printed elsewhere in this issue in order to show the content and logic of the arrangement. The sessions began and ended promptly on schedule. Luncheon was served in the building so the group was not allowed to scatter and no time was lost. Moving pictures, which were most instructive, were interspersed in the program at times giving proper periods for relaxation. The lectures and discussions were arranged with skill so as to give a logical sequence. Evenings were left free so men could return to their stores or seek recreation after the concentrated effort of the day. Forty registered pharmacists from Minnesota attended the institute.

The Institute was held in the Center for Continuation Study, a building unique among university buildings in that it provides classrooms, visual education facilities, excellent lodging, meals and garage space under one roof and at a nominal cost. The Center was the last great contribution to the University by the late president Lotus D. Coffman. The success of the program was due largely to the thoughtful and skillful planning of Dr. C. V. Netz and the credit for the conduct of the program and the care and comfort of guests was due to the efficient work of the director of the Center, Mr. A. R. Holst.

In the Gleanings from the Editor's Mail in the January issue of the Journal, Dean John F. McCloskey brings up the problem of what shall be done with the physically handicapped man when he applies for entrance to the college of pharmacy. This has always been a problem with us and as the men come back from the war it will become of increasing importance.

The problem has been a concern of the faculties of our teachers colleges. In my day three teachers college deans have approached me as director of the university's health service to see if a way could be found to prevent the physically handicapped from entering the teachers college. It is admitted that such students are often superior students and make excellent teachers. The objection is that it might be difficult for them to be placed since no one wants a cripple in the school room. There is no provision in the law whereby a physically handicapped person can be excluded, neither do I think it is desirable if it could be done. It is far better to have a physically handicapped teacher in the school room than a mentally or morally handicapped one and there are plenty of them. The physically handicapped successful teacher becomes a great inspiration to young people, the morally and mentally handicapped, never. The same principle applies to the drug store as to the school room. As I write I am thinking of two pharmacy graduates of my own institution. One a young woman, struck down by infantile paralysis when a child. She grew to womanhood unable to move a muscle in either leg. She went through the university walking on crutches. She fin-

ished the course at the top of her class. It took some time to find a place for her in a store, but it came in a good store in a county seat town. After five years of service in that store she established a store of her own in a suburban location and took the business of that suburb from her competitor.

The other one was a young man who as a boy had the roving spirit and he started out to be a tramp. At the age of twelve he fell from a box car and lost his right arm, at the shoulder, under the wheels of a train. The state rehabilitation office got hold of him. He chose pharmacy as the field he would like to follow. Laboriously he completed every course in the curriculum. With one hand he compounded prescriptions and folded powders as cleverly and neatly as anyone in his class. For reliability he stood out as superior. After graduation he became the pharmacist in the State Hospital for the Tubercular. Today he is the manager of a store in Uvalde, Texas, and is compounding prescriptions for a former vice-president of the United States.

I am thinking of a third case. This case happens to be a son of mine. When a mere lad he had an accident which doomed him to monocular vision and the vision of the remaining eye was far from normal. He made the national honors scholarship society in high school. He took basic military science in the University, because of his handicap he could not qualify for advanced R.O.T.C., but he stood first in marksmanship in his company the four semesters he took basic. He finished the University with Phi Beta Kappa honors. He studied medicine with credit to himself. He found because of his handicap he could make neither the Army nor the Navy. He is today interning in the Medical College of Virginia. On the day he graduated in medicine he made this amazing statement to his amazed father,—“Pop, I have learned to do all the things with one eye that other fellows do with two and I can do a lot of things I am sure I never could have done if I had had good vision. I believe my handicap has turned out to my advantage.

The story of these young people is my answer to the question Dean McCloskey has raised. The physically handicapped are both an inspiration and a challenge to the physically normal. All these students ask for is opportunity, not sympathy.

Rufus A. Lyman

Gleanings from the Editor's Mail

I have written an article on the subject of "Pharmaceutical Engineering" which subject has created considerable interest among manufacturers, educators and pharmacists with whom I have discussed the subject. The curriculum given does not change the pharmaceutical course any, but merely dovetails into a course in chemical engineering.

Dr. Glenn Jenkins of the College of Pharmacy, Purdue University, and Dr. Charles H. Rogers of the University of Minnesota College of Pharmacy were conferred with in regard to the curriculum and are in agreement with it. Several Deans have expressed their enthusiasm for the subject, among whom are Dr. DuMez, Dr. Kendig and Dr. Ivor Griffith.

Dr. Swain has suggested that I submit this paper to the American Journal of Pharmaceutical Education of which you are editor, stating "I think you have raised a most interesting subject, and one which I am sure will stimulate much constructive thinking once it has appeared in print."

In industry, there is very much need for men with backgrounds of the kind which is suggested in this paper. Several manufacturers with whom I have discussed the matter have acknowledged this need and have stated that they would employ immediately men with this type of background if they were available. Since the pharmaceutical manufacturer is becoming increasingly important from the chemical as well as the pharmaceutical points of view, it is unfortunate in my opinion that there are not more pharmaceutically trained men to take advantage of the opportunities that present themselves now and in the future. It would be extremely unfortunate, I think, if the pharmaceutical manufacturing (and wholesale as well) branch of the drug industry should get completely out of the hands of pharmacist.

Bloomfield, N. J.
December 14, 1944

ARTHUR F. PETERSON

Assuming that the present rules of the ODT remain in effect, I should say that the annual conventions should be limited to meetings, in the most convenient and accessible points, of the executive committees and those officers of the associations as are required to conduct the essential business of the organizations. This, I believe, should apply to the state conventions as well as to the national conventions.

April 5, 1945

W. T. SUMMERFORD
University of Georgia

It is my opinion that our annual meeting of the various associations should not be abandoned if it is at all possible to avoid doing so.

Since this is the only opportunity that we have for meeting and exchanging opinions, it would seem more imperative than ever that the

meeting be continued during the present emergency. In addition, I believe that any exchange of opinions and ideas that we might get relative to our plans for a post-war educational program are of great value, and the opportunity for such exchange should not be missed. Therefore I do not believe that it would be wise for the associations themselves to consider abandoning their meetings. However, the final decision will rest with the Office of Defense Transportation and we should abide by whatever decision they render.

This being the case, why not continue with our plans for a meeting, with the understanding that any papers that might be prepared for presentation will be published in the appropriate journals, should it be found impossible to hold the convention.

April 4, 1945

GEORGE E. CROSSEN
Oregon State College

You asked me to make a statement for publication with regard to my opinion on the wisdom of abandoning the pharmacy conventions in war time. This is it:

The question as to whether or not pharmacy and especially the A. Ph. A., should hold its conventions during the present war-time emergency is one I have given considerable thought to. I believe that attendance at these conventions is important in the professional development of any one concerned with the progress of pharmacy and we cannot expect rapid progress without exchange of ideas and stimulation from our fellow pharmacists. I do not believe, however, that we can justify a general convention in face of the present conditions and the request of our government. The important matters can be adequately cared for by the executive committees and various councils. Matters requiring a vote of the membership can be taken by mail. To offset the loss of personal contact, I would urge a freer expression of ideas in the journals and more and better attended local or area meetings.

April 10, 1945

ALLEN I. WHITE,
School of Pharmacy
State College of Washington

As to the advisability of abandoning our pharmacy convention for the duration of the war, I think that has been taken care of by the Office of Defense Transportation. I understand that the Council is to have a meeting in May—as late as possible—at which this subject will be discussed. Whatever the outcome of the discussion, even if Germany has admitted defeat at that time, I feel that we shall not be permitted to hold a national convention, because the railroads will be chiefly occupied in transporting men and material westward so that Japan can be eliminated. And we certainly would not want to interfere with the war effort, even if we could. Organizations similar to ours have been forced to cancel their national meetings. Can we expect any other disposal of our convention?

Do I feel that something will be missed by not having the convention? Certainly! And I feel that everybody who is really interested in the advancement of pharmacy feels the same way. First, members will miss the presentation and discussion of papers. True, we shall read many of the papers as they appear in published form, but it is my opinion that the writer of a paper can best read it or offer it to a group. Without a convention, the discussion is lost. And often the discussion is very important. Also, without the convention we shall not have the general exchange of ideas which we have when we stop and talk with each other.

If we do not have a national meeting, a great deal more work is going to be placed on the shoulders of our officers. Much of the business, which ordinarily would be conducted by personal contact, will of necessity, be conducted by mail and wire. This means more work. But I feel that the officers realize this, and will do everything within their power to keep the business sailing smoothly.

So that is my opinion of our situation. I do not know whether you are entirely in accord with my ideas, but I feel that they are sound.

LEWIS E. MARTIN,

University of Illinois

April 9, 1945

The arguments you presented in the January issue of the *Journal* in favor of holding the A. Ph. A. convention are, except for the reference to transportation of cigarettes, sound and logical. I cannot disagree with you that there is too much needless train travel. However, I think you have overlooked one point against holding a convention that is stronger than most ideas that can be presented for it. That point is public opinion.

Assuming that we are granted permission, I feel it would be unwise to meet if conditions in September are generally as they are today. At this time it appears that they may be considerably improved by then. If they are not and the public is in its present critical mood, we would be placing pharmacy in an embarrassing position. We would be opening the door for much criticism which we could not justly defend.

The convention is the high spot of the year for many of us. We all profit by it, individually and collectively. Yet whatever we might accomplish for the good of pharmacy from within could be outweighed by the damage from without.

I do not know of any large conventions that are being held in this section. All of them have been cancelled. Furthermore, many of the national scientific organizations, such as A.A.A.S., A.C.S., and A.M.A. have already called off their meetings. We certainly should fall in line with the examples that have been set.

Regardless of how much each of us personally would like to see the meeting held, we should think seriously before taking any action that might jeopardize the good will toward pharmacy.

TOM D. ROWE,

Medical College of Virginia

April 6, 1945

Although no word has been received to date on an Association meeting for 1945, I presume there will be none. It is probably unwise for the officers to waste the time necessary to make application to O. D. T. for permission to hold a meeting because there is little possibility that the request would be granted. I reach this conclusion because the American Medical Association and, I presume, the American Dental Association did not even deem it advisable to make applications for annual meetings.

It is regrettable that three years should pass with Association meetings which offered but a modicum of time for teachers conferences in the various branches of pharmacy. And now it appears that there will be none at all this year. Progress in pharmaceutical education will suffer because it is at these conferences and at the sessions of the Associations as a whole where the new and old in pedagogical practices and theories are discussed collectively, where the younger teachers and research workers are either mildly enthused or deeply inspired by meeting the more eminent pharmaceutical educators, and where an *esprit de corps* is developed which certainly does no harm to pharmaceutical education over the nation.

Standing committees can accomplish more in a three hour session during the annual meeting than they can accomplish in a year of correspondence. As chairman of two committees over the past four years I have found it almost impossible to obtain cooperation from all members of the committees. On one committee two members out of five, and on another committee, three members out of seven, would not answer correspondence. I know that other committee chairmen have had the same experience. As a result the annual report is usually the brain child of the chairman and one or two members, not the collective work of the entire committee even though it may be submitted as such.

CHARLES V. NETZ,
University of Minnesota

April 5, 1945

Never in the history of pharmacy has there been a period when the need for conventions equalled the present need, for never has there been a time when significant advancements were made in the rapidity with which they are made today. So many new methods of therapy and principles of medication are introduced during the course of a year that it is almost impossible for any individual pharmacist or teacher of pharmacy to keep abreast of the field.

A scientific convention such as that of the American Pharmaceutical Association serves the purpose of a "clearing-house" for ideas. It is a place where new ideas are presented, sifted and evaluated. Even if one does not attend the convention he has the opportunity of reading the reports and the minutes of discussions and is thereby acquainted with current thoughts and trends. It is doubtful that scientific papers presented by mail often receive the same amount of discussion and reach as many persons as do those presented before a scientific body in session. And it is certain that discussion cannot be as productive when carried on by correspondence as when carried on in an assembled group.

The convention serves another very important function. It is the center of coordination for all the pharmaceutical interest. It is the

"meeting-house" for pharmacy, the place where timely objectives are set, where current needs are presented and evaluated, where the whole business of pharmacy undergoes a house-cleaning and has an opportunity to find the need for and the way to better public service.

On the other side of the balance sheet we have the inconveniences of war-time travel, the overcrowding of cities, the relatively small number of persons who will be capable of attending a convention if it is held. In spite of all these things, it is my belief that scientific and professional conventions work for a public service and that they are important to the best interests of the nation as a whole. Therefore, I feel that such conventions should be among the very last of the civilian functions to be abandoned even in time of war.

JOSEPH B. SPROWLS,
University of Colorado

April 5, 1945

I am sending you my views on whether or not a full National Convention should be held during times of war. I realize the obstacles which confront us in convening in large groups and the difficulties many members would encounter in leaving their work to attend. Faculties, wholesalers, retailers and manufacturers have been forced into more continuous and confining efforts in order to meet their added responsibilities. The added labor as well as transportation and housing facilities tend to discourage the thought of a full convention.

However, as we review the problems that have confronted all fields of science since the entry of our country into the present world conflict, we often are amazed at the accomplishments that have been achieved. In the field of pharmacy, problems of drug supplies and drug distribution so that the Armed Services and civilians were adequately served have been enormous in scope. The tempo of research has been increased to meet the demands for supplies deprived us by enemy conquests and resultant shortages. These researches have resulted in the use of many medication agents of efficaciousness almost beyond belief.

Educational institutions have had their problems in an effort to train men and women to take their places alongside the other professional workers whose duty it is to maintain and preserve life. These problems need not be reviewed here since many are associated with all schools while others are peculiar to individual schools.

The added responsibilities and difficulties brought about by war create a demand for a full convention in each scientific field that is even greater than during times of peace.

The intimate exchange of ideas and information through free discussion by many is laden with possibilities not possible to attain through the written page. The summation of annual achievements of the integral branches of pharmacy and a correlation of plans for the future are paramount in our progressive development. Neither of these can be effectively and timely accomplished without the contacts and inertia created by a full convention.

I, therefore, believe that the need for an annual National Convention in each field of science is essential and that this need is multiplied during periods such as the ones through which we are now passing in order that the best efforts for the welfare of all can be ascertained and put into motion.

JAMES W. JONES,

April 10, 1945

State University of Iowa

CAPTAIN MURPHY'S LETTER*

"In one of your letters you mentioned that people were looking a bit askance at the returned G. I. and wondering if he shouldn't be psychoanalyzed before he enters the University. I hope you'll appoint yourself a committee of one to balk against such utter nonsense! Take any of those so solid citizens that want to psychoanalyze these boys before they allow them back in society, and put them in the place of these boys and watch their cookies crumble!! All that most of these boys need is to be allowed to pick up life where they left it. They don't need people prying into their minds reawakening the horror they are trying to forget. Nor do they need pity—pity will only weaken them! They need the kind of understanding that doesn't pry into the things they want to forget. They need the security of slipping back into the community life as if they had never been away. They need people who say "Hello, Joe, glad you're back—we've needed you here or there—" They don't need "Oh, you poor boy—it must have been frightful! Tell me all about it!" And if they go away someplace and get silently drunk once in a while it's just their way of forgetting the cries of men being blown to bits around them and their way of shutting out the sight of their friends being picked off around them. These are brave boys, but the fight that the public at home is going to force them to put up with is as tough a fight as they're fighting here—unless John Q. Public gets wise and realizes that all they want is to be let alone in the security of the homes they left—the right to be just John Doe eating hamburgers at the corner White Castle, having a beer with the boys and holding his gal's hand in the movies. Gosh, I'm getting all carried away—you'd think I was writing an editorial! Anyhow, I feel so strongly about this that I get a little rabid!"

* This paragraph is an excerpt from a letter to her father by Captain Ruth St. Clair Murphy who is an Army nurse in a general hospital in Luxembourg. Captain Murphy is the daughter of Colonel James P. Murphy, Ph. C., B. Sc., Colonel Infantry, U. S. A., Professor of Military Science and Tactics and Commandant of Cadets at the University of Nebraska. Colonel Murphy had his pharmaceutical training at the South Dakota State College. Division of Pharmacy, and operated his own store in South Dakota before he enlisted in the regular Army. This letter is printed here because it gives the attitude, first hand, of the fighting men on the western front, or for that matter from around the world, as to how they would like to be treated when they return to college or civilian life. Wise will be the home folks who follow this advice.—Editor.

Notes and News

University of Colorado, College of Pharmacy.—Dr. R. G. Gustavson has resigned as acting president of the University to become dean of the faculties and executive vice-president of the University of Chicago. During the absence of President Stearns in war service, Dr. Gustavson has also served as chairman of the executive committee of the college of pharmacy since the retirement of Dean Washburn in 1943.—The degree of Bachelor of Science in Pharmacy was conferred upon three students at the February commencement.—Col. Charles T. Poe, formerly in charge of a quartermaster's depot in North Africa, is now in charge of one at Lyon, France.—Lt. Fred G. Drummond, instructor in pharmacy until his induction into the Service, is now serving with the combat engineers in the China-Burma-India theater.—Dr. Norman F. Witt recently gave an address on "The Chemistry of Water" before the Water Works School which was sponsored jointly by the Colorado Section of the American Water Works Association and the University of Colorado. Dr. Witt is also a member of the Colorado Basic Science Examiners.—Dr. D. W. O'Day spoke recently before the Lincoln School Parent Teachers Association and the Boulder Kiwanis Club. Dr. O'Day in the near future will accompany Mr. Eric Rockham, acting director of admissions to the University, on a high school speaking tour of the state in the interests of the University as a whole.—Dr. Sprowls gave a vocational talk on medical technology to the members of Tri Delta Sorority on the vocational guidance program of the University.—An item of particular importance to Colorado pharmacy is the passage of an amendment to the Colorado pharmacy law by the present session of the legislature. This bill had as its objective the elimination of the grade of assistant pharmacist in Colorado. The amendment provides, in brief, that those persons registered as assistant pharmacists in Colorado prior to July 2, 1948, may become registered pharmacists upon the completion of ten years of experience in the state of Colorado as an assistant pharmacist. Provision is made that military service may be substituted for experience as an assistant pharmacist for those persons now serving with the armed forces. The bill also provides that the registration in Colorado as assistant pharmacist of persons previously registered as pharmacists in other states will cease July 2, 1945. While it is difficult to state at this time exactly what effect this bill will have on pharmacy in Colorado, it is felt that it will lead to the eventual betterment of pharmaceutical standards in this state. It is also believed that recognized pharmaceutical education will have a firmer footing in Colorado than it has had in the past. The bill was sponsored by the Colorado Pharmacal Association and was presented by a special committee of this association. It was an outgrowth of a resolution which was unanimously adopted by the 1944 convention of the association recommending that suitable legislation be enacted to bring an end to the registration of assistant pharmacists in Colorado.

University of Connecticut, College of Pharmacy.—Three students maintained an honor rank for the first semester. They were Max Galinsky, class of 1947, and Stanley Spack and Lucille Kiermont both of the class

of 1948. The Lee and Osgood scholarship for the second semester was divided between Miss Kiermont and Mr. Spack.—The program for the February meeting of the student branch of the American Pharmaceutical Association was in the form of a quiz contest under the direction of Maureen Hanrahan.

Detroit Institute of Technology.—Professor Bernard A. Bialk has been elected secretary of the Michigan Academy of Pharmacy.

Duquesne University, School of Pharmacy.—The twentieth anniversary of the founding of the school was celebrated on April 19. Dr. Robert P. Fischelis was the guest speaker on the occasion.—Mr. James R. Monaco, of Steubenville, Ohio, has contributed \$25.00, and others, smaller amounts, to insure the publication of *The Duquesne Pharmacist* during the next school year. This is a most commendable act on the part of the alumni.

University of Florida, School of Pharmacy.—Dr. P. A. Foote has been actively engaged in helping to shape some legislation to be placed before the state legislature.—The state board of pharmacy held its semi-annual examination on the University campus.

State University of Iowa, College of Pharmacy.—Susan A. Showers was initiated into membership in Rho Chi in April. Mrs. Showers was also awarded the Ford Hopkins fellowship as the most deserving student who had completed the first year course.—Paul V. Maney, who received the Doctorate at the April Convocation, has been elected to Sigma Xi.

University of Kansas, School of Pharmacy.—Twenty-eight students enrolled for the term beginning March 6.—The following students have been initiated into Kappa Psi: Wayne Curry, Roy Johnson, Laurens Rossilou, Rayburn Wests, and Myron Peterson. Dr. Roy A. Bowers was made *ab faculitate* member.—Kappa Epsilon recently gave a tea in honor of Mrs. J. Allen Reese at the home of Mrs. R. A. Bowers.—At the March meeting of Sigma Xi, Dr. R. A. Bowers gave a paper on "The Chemotherapeutic Approach to the Development of New Medicinals."—The latest figures show 94 graduates and 47 undergraduates have entered the Armed forces. Forty-two of the former group and 15 of the latter have been commissioned and nearly all of the others have non-commissioned ratings.

University of Minnesota, College of Pharmacy.—In his capacity as chairman of the State Pharmacy Advisory Committee to Selective Service and the War Manpower Commission, Dean Rogers has recently made a number of calls upon pharmacists.—An abbreviated convention of the Minnesota State Pharmaceutical Association was held in the Nicollet Hotel, Minneapolis, on April 16. Dr. Charles V. Netz, Dr. Charles O. Wilson and Dean Rogers took part in the meeting in their respective capacities as secretary of the Association, chief chemist for the Minnesota State Board of Pharmacy, and member of the Executive Committee of the Association.—Mr. H. H. Gregg, retail pharmacist, and Dr. Ole Gisvold are chairman and secretary-treasurer, respectively, of the Northwestern Branch of the A. Ph. A.—Dean R. A. Lyman of Nebraska addressed the student body of the college and the Northwestern Branch of

the A. Ph. A. on January 30.—Chief Pharmacist V. Kenjoski has resigned his position to open a retail pharmacy in Osseo.—Mr. Stewart Brokaw was appointed to succeed Mr. Kenjoski.—Mr. John W. Snowden of Pictorial Paper Package Corporation addressed the Northwest Branch of the A. Ph. A. and the student body of the college on January 29.—Dr. Charles V. Netz taught materia medica to cadet nursing groups during the winter quarter and to medical students during the spring quarter.

University of Montana, School of Pharmacy.—A list of graduate and ex-students in the service has just been published. The roster shows there are 62 graduates and 32 ex-students known to be in some branch of the armed forces. Two graduates have been lost in action.—Dean C. E. Mollett, having reached the retiring age for administrative work, will continue on the teaching force after the current year.—Dr. Curtis H. Waldon, who was a member of the teaching staff in 1941-42 but who has since been on the faculty at Purdue University, will assume the deanship at the beginning of the next academic year.

University of Nebraska, College of Pharmacy.—Tom S. Miya and Midori Sakamoto were elected associate members and Kazuo K. Kimura was promoted to full membership in the Nebraska Chapter of Sigma Xi.—Dr. Harald G. O. Holck, vice-president of the local Sigma Xi, was elected president for the year 1945-46.—Dr. Paul J. Jannke has been named vice-chairman of the local chapter of the American Chemical Society.—Dr. Donald M. Pace was appointed program chairman of the Nebraska Academy of Science.—Midori Sakamoto, Victoria Chilquist, Charlotte Cox, Esther Anderson, and Frances M. Longfellow were among the students recently recognized for high scholarship at the annual University Honors Convocation.—Midori Sakamoto was also recognized for superior scholarship in the senior class.—Victoria Chilquist was elected member of Rho Chi.—Charlotte Cox and Bernice Kimble were recent pledges of Kappa Epsilon.

Ohio State University, College of Pharmacy.—During the months of January, February, and March the Ohio State Museum had on display a special exhibit of "Early Ohio Medicine." Included in the panorama was a typical doctor's office, and a reproduction of a real old time apothecary shop. The faculty of the college, and the students of the student branch of the A. Ph. A. cooperated in furnishing the information and ideas, as well as the crude drug display for the occasion. It was educational and interesting, and Director Edward Thomas of the museum reports that it was perhaps the most visited display they have had in many years. Originally scheduled to remain on display only until the latter part of February, its retention until the first part of April bears out the belief that people generally are interested in pharmacy and medicine.—The student branch also assisted in the development of a display window for one of the local drug stores, as a general service to the pharmacists of the city. These activities mean a great deal to the students as well as the store operators.

University of Oklahoma, School of Pharmacy.—At a meeting of the Oklahoma University Pharmaceutical Association, Dean D. B. R. Johnson presented the following awards: the DePree prize in pharmacology,

Russell Allen; Southern Pharmaceutical Journal award in beginning pharmacy, William Saunders; Drug Topics award for aptitude in dispensing, Jack Harris; Lehn & Fink medal for highest senior rank, Will Purnell; Rho Chi plaque for highest sophomore rank, Louise Pope; Lambda Kappa Sigma award for the outstanding girl, Jo Ann Kirkpatrick.

University of Puerto Rico, College of Pharmacy.—The freshman pharmacy class is the largest in the history of the institution. While the upper classes have been affected materially by war conditions, there is a larger per cent of women students than ever before.—Dr. Jose Menendez is on leave of absence for one year and Dr. Edith Rodriguez is in charge of his classes and the laboratory work.—Dr. Edward Claus, formerly of the school of pharmacy of the University of Pittsburgh, has been appointed associate professor. He is teaching the courses in pharmacognosy and pharmacology and assists in the supervision of the medicinal plant garden. He has made collections of the native medicinal and allergenic plants and has started an herbarium. Recently he gave a well-attended lecture sponsored by the biology museum of the college of science on poisonous plants of Puerto Rico. The lecture was illustrated by plant specimens from the island and also from the United States.

Rutgers University, New Jersey College of Pharmacy.—The winter semester ended on March 24. At that time five seniors completed the requirements for their degrees. At the present time we have second-term juniors and first-term sophomores in attendance. Under the program of three sixteen-week semesters a year, our next freshman class will enter about the middle of July.—Professor Martin S. Ulan resigned from his position as consultant to the Foreign Economic Administration as of December 30, 1944.—Dr. Thomas D. Rowe has been appointed assistant dean. He will assume his new duties on July 1, 1945. At the present time he is assistant dean at the college of pharmacy of the Medical College of Virginia. Dr. Rowe succeeds Dr. George C. Schicks, who has been on a part-time leave of absence since September of 1943. Dr. Schicks is now director of the Perth Amboy General Hospital, but he will continue as a special lecturer in hospital and dental pharmacy at the New Jersey College of Pharmacy.—Dr. Bernard J. Brent of Hoffman-LaRoche, Incorporated, has been appointed honorary professor of endocrinology.—Mr. Jules Pernot is now serving as an instructor in pharmacy. He is a registered pharmacist and a graduate of the college.—During the winter a series of five seminar lectures was held under the auspices of the Northern New Jersey Branch of the American Pharmaceutical Association. The speakers and topics follow: Dr. Bernard J. Brent, Scientific Director of Roche-Organon, The Sex Hormones; Dr. William L. Sampson, Merck Institute of Therapeutic Research, Vitamins; Dr. Madeline O. Holland, Editor American Professional Pharmacist, New Therapeutic Agents; Dr. Willard Verway, Department of Bacteriology, Medical Research Division, Sharp & Dohme, Microbiotic Agents; Dr. Donald F. Robertson, Merck Institute of Therapeutic Research, Amino Acids and Protein Hydrolysates.—On May 11, 1945, the second annual Science Day will be held at the college between the hours of 1:00 and 10:00 P. M. Various displays depicting procedures and experiments in the pharmaceutical and allied fields of study are to be set up by the stu-

dents under the supervision of the faculty. Science students in high schools and preparatory schools are invited to visit the college to obtain a more comprehensive idea of what pharmacy means. Last year some 600 people attended the program. It is expected that even more will be present this year.

Temple University, School of Pharmacy.—Alice F. Pyfron was the recipient of the award which is given to the member of the freshman class who makes the highest general average for the first semester.—Leo Nejelsky, public relations counsel, recently addressed the student body on "The Pharmacist, The Key to Better Public Relations."

State College of Washington, School of Pharmacy.—Dr. A. I. White has recently been promoted to an associate professorship.—Lorna Foss and Mary Francis McKeirnan have been made members of Rho Chi.—The entire pharmacy faculty attended the meeting of District No. 7 at Spokane in April. Dean Dirstine and Dr. White presented papers and Dr. Bang was re-elected secretary-treasurer.

University of Washington, College of Pharmacy.—The registration was materially increased by the enrollment of a large freshman class the second semester. The group included four veterans.—Two bachelor's degrees were given at the end of the fall semester.—Dale Lewis, Beverly Selesnick and Mrs. Fern Brigham have been elected to Rho Chi.—Robert Lusk has received a scholarship from the Spokane unit of the State Pharmaceutical Association.—Dorothy Newkirk, Don Kadleman, Kathleen Hansen, Gilbert Cleasby and Rosalind Swolling received the scholarships offered by the Seattle unit of the State Association.—Mrs. Fern Brigham received the McKesson Robbins award.—Rho Chi plans to sponsor a series of educational motion pictures to be shown before the faculty and students.—Dean Goodrich and Dr. Rising attended the meeting of District No. 7 at Spokane. Dean Goodrich presented a paper on the evaluation of certain military credit and experience.—Dr. Rising was elected as chairman for the coming year.

Wayne University, College of Pharmacy.—At the January meeting of the Michigan Academy of Pharmacy, Dean Roland T. Lakey was elected president.

The American Institute of the History of Pharmacy has presented its members with a number of artistic reproductions of famous paintings. The latest one is a reproduction of a Sixteenth Century painting by Hans Baldung (ca 1470-1552) of Theophrastus Bombastus Von Hohenheim, better known as Paracelsus. It was he who, in advocating the internal therapeutical use of chemicals, blazed new paths for medicine and pharmacy. His statement that "not as they say—alchemy is to make gold, make silver: here the purpose is to make arcana and to direct them against disease," drew distinctly and successfully the borderline between speculative alchemy and scientific pharmaceutical chemistry. The original of the reproduction is or was in the State Gallery at Schleissheim near Munich. The inscription between the coat of arms and the seal of Paracelsus beneath the portrait calls him a philosopher, a physician, a mathematician, a chemist, a cabalist, a diligent investigator.

Miscellaneous Items of Interest

Program of the Eighth Pharmaceutical Institute

UNIVERSITY OF MINNESOTA

Center for Continuation Study

Monday, January 29

- 9:00 Introduction.....A. R. Holst, Charles H. Rogers
 9:20 Recent Trends in Medicine.....William A. O'Brien
 10:55 Motion Picture: ALLERGY. (Courtesy Lederle Laboratories, Inc.)
 11:30 Stainless Synthetic Coal Tar: Its Use in Ointments.....Gustav Bachman
 12:30 Luncheon. Center dining room.
 1:30 The Newer Ointment Bases.....Charles V. Netz
 2:15 Drug Standardization and Deterioration.....Charles O. Wilson
 2:45 Motion picture: INDUSTRY FOR HEALTH. (Courtesy Upjohn Company)
 3:20 Greater Post-war Security Through Better Pharmacy Design.....John W. Snowden

Tuesday, January 30

- 9:00 Technique of Erythrocyte and Leucocyte Count....Earl B. Fischer
 10:00 Film-slide: EMERALD GREEN AND GOLD. (Courtesy Owens-Illinois Glass Company)
 10:25 The Revised Curriculum in the College of Pharmacy.....Charles H. Rogers
 11:15 Some Prescription Incompatibilities and Compounding Suggestions.....Ragnar Almin
 12:30 Luncheon. Center dining room.
 1:30 Sex Hormones.....Ole Gisvold
 2:35 Motion picture: THE STORY OF BLOOD PLASMA. (Courtesy American Red Cross)
 3:10 The Educational Progress Necessary to Make Pharmacy Indispensable to Community Life and Health.....Rufus A. Lyman
 4:20 Motion Picture: HOW TO EAT

Wednesday, January 31

- 9:00 Penicillin.....Charles O. Wilson
 10:15 Motion picture: CONTROL OF POULTRY DISEASES (Courtesy of Lederle Laboratories, Inc.)
 10:50 Pharmaceutical Preparations of the U.S.P. and N.F. Supplements.....Charles V. Netz
 11:45 Motion picture: UNSEEN WORLD (The Electron Microscope)
 12:30 Luncheon. Center dining room.
 1:30 Antimalarial Drugs.....Raymond N. Bieter
 2:35 Motion picture: QUALITY CONTROL. (Courtesy Owens-Illinois Glass Company)

3:05	Sulfonamides in Dental Practice.....	Charles V. Netz
3:35	Cathartics and Diuretics.....	Taito O. Soine
6:00	Dinner. Center dining room.	
	A Chemical Engineer Looks at the Future of Minnesota Industry.....	Ralph E. Montonna
	Presentation of Certificates.	

Citation by Dr. Curt P. Wimmer in Presenting the Remington Honor Medal to Dr. H. Evert Kendig

DECEMBER 12, 1944

Dean Kendig, the service of a professional etymologist is, in my opinion, not required to inform us that the ancient maxim, "Know Thyself," is represented in your name. This maxim, forming as it does the very essence of ancient Greek philosophy, means, literally translated "Kenn dig," for "know" and "kenn" are truly synonymous.

But the Greeks expanded this maxim to include the thought that no man could be completely happy and contented in his life, unless he knew all about himself.

Now, I am sure that you do agree with me when I say that after listening to all of the speeches made about yourself this evening, you know yourself much better than before and, if the purpose of this meeting had been merely to add to your earthly happiness, that purpose has now been fulfilled, I know.

But our meeting has a further purpose and a deeper meaning: It is my privilege to present to you a medal awarded to you by the vote of the Past Presidents of the American Pharmaceutical Association.

This award makes you a wealthy man, indeed. Not in the sense of monetary consideration—no, not at all—but it makes you rich in the possession of the admiration, the respect, the gratitude of colleagues within and of your friends without the pharmaceutical profession. For all of this, this golden medal is the concrete evidence.

This medal, too, admits you to the circle of a group of carefully selected men, the Hall of Fame in pharmacy, over which Professor Remington presides. He now extends his hand to you in welcome and confers upon you a new designation: Evert Kendig, Remingtonian.

Whenever you behold this medal, may its golden light remind you of the sentiments and good wishes expressed by all of us about you and may

This medal and this moment
have no kin or fellow

With any past or yet to be
Secure, beyond the clocks that measure
They keep their own reality.

Now, speaking for the New York Branch of the American Pharmaceutical Association, I hand you the award with sincere congratulations.

Human Interest Notes

Good news comes from Minnesota that Mrs. Charles H. Rogers is convalescing nicely following a recent operation.

Dean Charles H. Rogers of the University of Minnesota is on the verge of adding laurels to pharmacy in the Minnesota University Faculty Club Tournament at billiards.

Dr. Robert G. Rogers, son of Dean and Mrs. C. H. Rogers, is a surgeon with the 121st Evacuation Hospital somewhere in France.

Pvt. James R. Fisher, son of Dr. and Mrs. Earl B. Fisher, University of Minnesota, who has been stationed at an Army camp in California since his induction in 1944, has been transferred to the Aberdeen Proving Ground in Maryland.

During a recent visit to Minneapolis, the Editor was a dinner guest of the ever gracious Dean and Mrs. Frederick J. Wulling. Friends everywhere will be happy to know that Dean Wulling has all the intellectual vigor and the same keen interest in all matters pharmaceutical that he possessed decades ago when he was actually engaged in the battle for a dignified pharmaceutical educational program.

Nicolas Fenney, son of Professor N. W. Fenney of the University of Connecticut, College of Pharmacy, has recovered from an appendectomy performed at Saint Raphael hospital in New Haven in February.

Ann Petrey, native of Saybrook, graduate of the University of Connecticut, College of Pharmacy, 1931, executive secretary of Negro Women, Inc., has been awarded the Houghton Mifflin Literary Fellowship prize for fiction of \$2,400. Now a resident of Harlem, her book "The Street" is woven around Harlem's 116th street and is the story of a young negro woman's struggle for security.

A Book Review*

GEORGE URDANG. *The Apothecary Chemist Carl Wilhelm Scheele*. Madison, Wisconsin: American Institute of the History of Pharmacy, 1942. 71 pp. Illustrated.

Of the two discoverers of oxygen Joseph Priestley is by far the better known in this country, because he came to America, lived and died

* Reprinted by permission from *Bulletin of the History of Medicine*, Vol. XV, No. 5, May, 1944.

here, while Carl Wilhelm Scheele never left his homeland Sweden; and perhaps also because Priestley was a much more prolific writer whose works fill 25 volumes covering a great variety of subjects from chemistry to psychology, philosophy and theology while Scheele's works are contained in 2 volumes. Yet there can be no doubt that Scheele was one of the greatest chemists of all times, a brilliant observer and experimentalist, who not only—independently from Priestley—discovered oxygen but a great many other chemical substances such as chlorine, arsenic acid, arsenetted hydrogen, copper arsenite, molybdic acid, lactic, gallic and uric acid, glycerin and many others. In preparing oxalic acid he was the first to produce artificially a plant-constituent, and long before Wöhler he succeeded in making an organic elementary synthesis when he prepared hydrocyanic acid from coal, ammonium chloride and potash. He also found long before Pasteur that fermentation and destruction of vinegar in bottles could be prevented if the bottles were boiled in a water bath.

Scheele was an apothecary all his life, in Gothenburg, Malmö, Stockholm, Upsala, finally in Köping. His chemical discoveries soon won him wide recognition. At the age of thirty-two he was made a member of the Swedish Royal Academy of Science. Attempts were made to lure him to Prussia and England, but he refused all offers and remained loyal to his profession, continued to dispense drugs, using every spare moment for chemical research.

The pharmacists are justly proud of having so distinguished a scientist among their ancestors, and the present publication is a most appropriate tribute of the American pharmaceutical profession through its Institute of the History of Pharmacy to the memory of Scheele on the occasion of the two-hundredth anniversary of his birth. This publication obviously does not attempt to replace the comprehensive biography by Otto Zekert.¹ It wishes to revive the memory of the great chemist in

¹ *Carl Wilhelm Scheele, sein Leben und seine Werke*, published by the *Gesellschaft für Geschichte der Pharmazie*, Mittenwald, 1931-1935.

this country, particularly among the pharmacists, and succeeds in this admirably by presenting 37 pictures that illustrate the life and work of Scheele, with detailed explanatory legends. The pictorial section is preceded by a very good biographical sketch and an analysis of Scheele's achievements. At the end is a time-table of Scheele's experiments as reported by himself in his letters and notes. George Urdang is so competent and conscientious a scholar, who works from first-hand sources, that we can always rely on the facts and judgments he proffers.

Founded in Madison, Wisconsin, on January 22, 1941, the *American Institute of the History of Pharmacy*² is still very young. Yet it has been very active, and I may say that its activities have been in no proportion to the meagre funds available to it. This activity is entirely due to the enthusiasm and boundless energy of its director, George Urdang, who today is without any doubt the foremost authority in the field. From 1926 to 1933 Dr. Urdang was director and the driving spirit of the *Gesellschaft für Geschichte der Pharmazie*, and we are fortunate

² See *Bulletin of the History of Medicine*, December 1941, 10:550-700.

that circumstances brought him to this country where he made an unusually quick adjustment. Edward Kremers invited him to the University of Wisconsin, and together they published in 1940 a *History of Pharmacy* that will remain for a long time the standard work in the field.

It seems to me that an *Institute of the History of Pharmacy* has today a particularly important function to fulfill. It not only helps us to obtain a more complete picture of the history of civilization but can also greatly contribute to maintaining the dignity of a profession that is threatened by various forces. In this as in other fields the historical analysis paves the way that leads into the future.

It is obvious that an Institute needs funds, and it is to be hoped that the pharmaceutical industry, which at the moment has highly prosperous years, will endow it adequately. Urdang is the best possible man to build up and develop such an institution so that it will become a permanent asset to the pharmaceutical profession and to the country at large.

Henry E. Sigerist

New Books

The 1944 Year Book of General Therapeutics edited by Oscar W. Bethea, Ph. M., M. D., F. A. C. P., Professor of Clinical Medicine, Tulane University, School of Medicine (retired); Senior in Medicine Southern Baptist Hospital; Consulting Physician, Charity Hospital; Member of the Revision Committee of the U. S. Pharmacopœia 1930-1940; Author of "Clinical Medicine" and *Materia Medica, Drug Administration and Prescription Writing.* 1945. 447 pages. 23 illustrations. The Year Book Publishers, Inc. Price \$3.00.

The nature, quality of the material and the value of the Year Book in the various fields of medicine are too well known to need comment here. Of special value to investigators, teachers, students and practitioners of pharmacy is the Year Book of General Therapeutics. In these days when the market is flooded with new drugs with amazing claims being made for their therapeutic efficiency, it is even more important to the pharmacist than the physician that he have an authoritative reference book which gives the present status of the value of these drugs in the treatment of disease. The Year Book gives him that information and enables him to give intelligent advice to the public that flocks to him whenever a new panacea appears on the market. Of special importance today are the sulfa compounds, penicillin, the antirheumatics, the sedatives and hypnotics, the hormones and vitamins, and the serums and the antigens. What is truth and what is fiction one can learn from a study of the Year Book. The present status of new technics including caudal anesthesia and new tests for various purposes and a final chapter covering miscellaneous measures such as the treatment of bleeding peptic ulcers, one year observations on the treatment of cancer with egg white and convulsive shock therapy add greatly to the value of the 1944 Year Book for the pharmacist.

R. A. L.

INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

New Jersey

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark (1923)
Ernest Little Dean

New York

University of Buffalo, School of Pharmacy, Buffalo. (1939)
A. B. Lemon, Dean
Columbia University, College of Pharmacy of the City of New York. (1939)
Charles W. Ballard, Dean
Fordham University, College of Pharmacy, New York. (1939)
Charles J. Deane, Acting Dean
Long Island University, Brooklyn College of Pharmacy, Brooklyn. (1939)
Hugo H. Schaefer, Dean

North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill. (1917)
J. Grover Beard, Dean

North Dakota

North Dakota Agricultural College, School of Pharmacy, Fargo. (1922)
William F. Sudro, Dean

Ohio

Ohio Northern University, College of Pharmacy, Ada. (1925)
Rudolph H. Rasbe, Dean
The Ohio State University, College of Pharmacy, Columbus. (1900)
Bernard V. Christensen, Dean
University of Toledo, College of Pharmacy, Toledo. (1941)
George L. Baker, Dean*
Bess G. Emch, Acting Dean
(Bess G. Emch)
Western Reserve University, School of Pharmacy, Cleveland. (1902)
F. J. Bacon, Dean

Oklahoma

University of Oklahoma, School of Pharmacy, Norman. (1905)
David B. R. Johnson, Dean

Oregon

Oregon State College, School of Pharmacy, Corvallis. (1915)
George E. Crossen, Dean

Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh. (1927)
Hugh C. Muldoon, Dean
Philadelphia College of Pharmacy and Science, Philadelphia. (1900)
Ivor Griffith, Dean
Temple University, School of Pharmacy, Philadelphia. (1928)
H. Evert Kendig, Dean
University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh. (1900)
C. Leonard O'Connell, Dean

Philippines

University of the Philippines, College of Pharmacy, Manila. (1917)
Mariano V. del Rosario, Dean

Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras. (1926)
Luis Torres-Diaz, Dean

Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence. (1926)
W. Henry Rivard, Dean

South Carolina

Medical College of the State of South Carolina, Charleston. (1940)
William A. Prout, Director
University of South Carolina, School of Pharmacy, Columbia. (1928)
Emery T. Motley, Dean

South Dakota

South Dakota State College, Division of Pharmacy, Brookings. (1908)
Floyd J. LeBlanc, Dean

Tennessee

University of Tennessee, School of Pharmacy, Memphis. (1914)
Robert L. Crowe, Dean

Texas

University of Texas, College of Pharmacy, Austin. (1926)
William F. Gidley, Dean

Virginia

Medical College of Virginia, School of Pharmacy, Richmond. (1908)
Wortley F. Rudd, Dean

Washington

State College of Washington, School of Pharmacy, Pullman. (1912)
Pearl H. Dirstine, Dean
University of Washington, College of Pharmacy, Seattle. (1903)
Forest J. Goodrich, Dean

West Virginia

West Virginia University, College of Pharmacy, Morgantown. (1920)
J. Lester Hayman, Dean

Wisconsin

University of Wisconsin, School of Pharmacy, Madison. (1900)
Arthur H. Uhl, Director

*On leave of absence.

Fellowships, Scholarships, Assistantships

Purdue University School of Pharmacy

Five graduate assistantships (40% time)—Non-resident tuition exempt—\$1200 per year.

Several Purdue Research Foundation fellowships in pharmacy, pharmaceutical chemistry, and pharmacology—Non-resident tuition exempt—\$1080 per year.

Ohio State University, College of Pharmacy

Positions are available for the year 1945-1946 for six graduate assistants, two expected to major in each of Pharmacy, Pharmaceutical Chemistry and Pharmacognosy and Pharmacology. Remuneration is \$600 to \$800, depending on whether service extends thru three quarters or four quarters, with remission of fees except matriculation fee of \$15.00 which is paid only once, namely on admission. Fees, including non-resident fee, total approximately \$100.00 per quarter, hence, remuneration is equivalent to \$90.00 to \$100.00 per month. Duties of graduate assistants require about one-third time and the remainder of the assistant's time is to be devoted to graduate studies and research. Graduation with high standing from a recognized college of pharmacy is required.

University of Florida

Two positions as part-time graduate assistants will be available for the year 1945-46 with possible majors in Pharmacy. Pharmaceutical Chemistry, Pharmacognosy and Pharmacology. These positions require about twelve hours per week for performance of departmental duties assigned. The remaining time is to be devoted to graduate study. Salary to be \$600 to \$720 for the academic year of nine months with remission of some fees, such as non-resident tuition.

In order to qualify, candidates must have a B. S. in Pharmacy from a recognized college of pharmacy and a scholastic average of approximately "B" or higher. Evidence of good moral character and success in positions previously held is required.

The Graduate School expects to have available a number of scholarships at \$450 to \$700. These will be awarded on the basis of scholarship. Holders of the same may major in any department of the University.

Applications and credentials must be submitted before June 1, 1945.

University of Minnesota

Open to graduate students with majors in pharmaceutical chemistry or pharmacognosy.

Six \$1000 fellowships, without exemption from tuition, to be offered annually. The major study must be in pharmaceutical chemistry or pharmacognosy and full-time devoted to graduate study and researches.

One Teaching Assistantship, AH50 (12 months—50% time), \$885, with exemption from tuition.

Three Teaching Assistantships, BH38 (9 months—38% time), \$498, with exemption from tuition.

Applications should be made to the office of the Graduate School.

There are a number of undergraduate fellowships ranging from \$200 to \$740 which are available only to students and veterans registered in the College of Pharmacy. Applications should be addressed to the Dean of that college.